


DOWNTOWN MOUNTAIN VIEW PARKING STUDY

June 2011

DRAFT FINAL REPORT

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Downtown Mountain View Parking Study

DRAFT

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Downtown Mountain View Parking Study

Part 1:

Summary and Recommendations

DRAFT

Executive Summary

Every day, downtown Mountain View's system of public parking serves thousands of different drivers, allowing them to shop, dine, go to work, and reach their homes. Whether on-street or in surface lots and parking structures, parking plays an important role in access, mobility, shaping economic opportunities and quality of life issues. The relative availability and management of parking also affect driving habits and can have substantial impacts on roadway congestion and transit ridership. Public parking is an access system that the City finances and maintains at great expense but it is also a system that is fundamental to the economic success of the downtown and to the high quality of life enjoyed by the City's residents, employees, and visitors.

Although the existing conditions analysis and outreach surveys conducted for this analysis have identified several specific challenges, the overall system of parking in Downtown Mountain View generally works well. Taken as a whole, residents and merchants indicated a high level of satisfaction with current parking conditions. Similarly, the analysis of parking utilization data conducted for this report revealed that parking in the downtown generally functions smoothly. Parking management is a moving target, however, and projections of future parking demand and the financial performance of the parking system indicate that parking in the downtown will face new stresses and challenges in coming years.

The Downtown Mountain View Parking Study is a wide ranging analysis that touches on many different aspects of parking in the downtown. Ultimately, the focus of this study has been to provide insight into current parking conditions and to analyze the landscape of policy and program choices available to the City to ensure that this vital access system continues to function at a high standard and support the City's long term development and livability goals. The following report contains detailed supporting analysis on a variety of parking issues distilled into a comprehensive set of recommendations for an overall downtown parking management strategy.

Report Organization

The Downtown Mountain View Parking Study is organized into two parts. Part One of the Report is intended to be accessible to a wide audience and contains an overview of the study's components, methodology, and key findings. This summary is followed by a series of recommendations pertaining to parking policy and management in the downtown. The second, longer, part of the report contains the detailed technical analysis that was used to guide and inform the higher level recommendations contained in Part One. The written analysis and discussion in Part Two is organized into technical chapters mirroring the original "tasks" developed by the City in the scope of work. Finally, the report includes two appendices that provide additional supporting data and materials related to the technical analysis performed during the study.

Parking and Sustainability

In its detailed discussion of parking management, the following report emphasizes the potential that parking has to impact both the City's finances and the economic development of the downtown as a whole. It is important to note at the outset of the report, however, that parking management also has the potential to make Downtown Mountain View more sustainable. Vehicle emissions are one of the largest sources of green house gas emissions and airborne pollutants in urban areas and managing parking is a powerful tool for reducing and controlling vehicle trips.

Restricting parking through time, price, or other methods causes drivers to reevaluate their transportation choices. Faced with parking restrictions, many will continue to drive to Downtown Mountain View, but some may begin to consider making their trip using an alternative mode of transportation. Restricting and pricing parking makes sustainable modes of transportation like transit, walking, and bicycling relatively more attractive to downtown visitors and employees. Managing parking thus also helps the City maximize the investment it has made in creating a transit, bicycle, and pedestrian friendly downtown.

In addition to changing individual mode choices, parking management can also reduce congestion and vehicle miles traveled by ensuring that parking spaces are immediately available to drivers who need them. In congested areas where parking is completely full, a great deal of excess traffic is generated by drivers "cruising" for empty spaces. In large downtowns, Professor Donald Shoup has estimated that as much as 30% of vehicular traffic observed during peak hours is generated by drivers circling to find a vacant space.[1] In addition to generating unnecessary traffic, the hunt for parking also distracts drivers and can create additional safety hazards for pedestrians and cyclists.

Summary of Current Parking Conditions

The first effort in the Downtown Mountain View Parking Study involved a detailed analysis of existing parking conditions in the downtown. This work provided the foundation of data that was used in future study efforts directed towards projecting future parking demand and understanding the financial implications of any changes to the City's current parking management approach. The following report section briefly summarizes the key findings of this effort. The full existing conditions analysis can be found in Part Two of the report.

Previous Parking Studies

A variety of parking studies have been conducted in Downtown Mountain View over the past decades including both comprehensive studies and analyses related to specific downtown developments. The data and findings in these studies provide an important point of reference when considering current parking usage in the downtown. Studies reviewed as part of the existing conditions analysis included:

[1] Shoup, Donald. *The High Cost of Free Parking*. American planning Association (Planners Press). 2005.

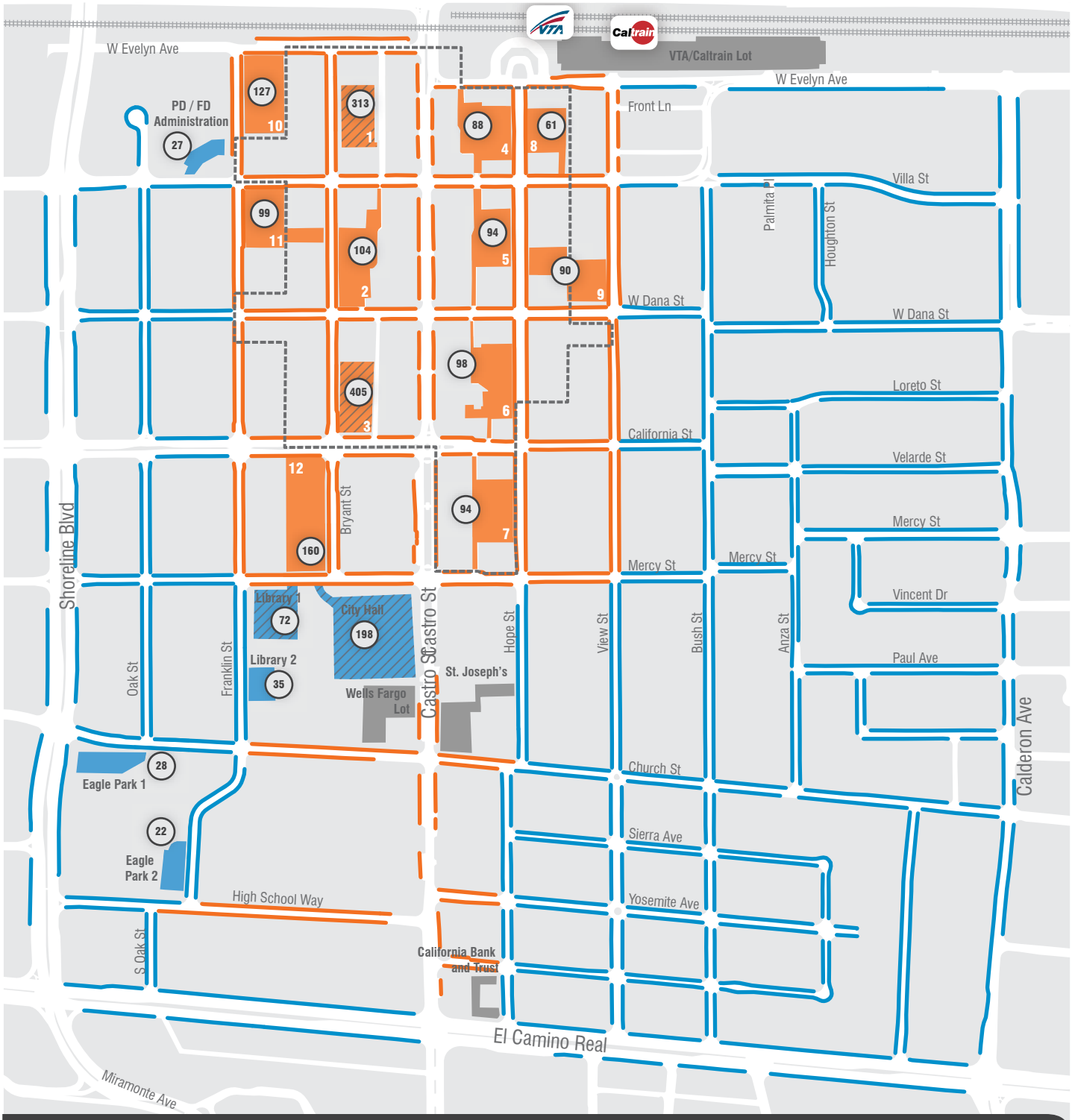
- The 1992/1993 Comprehensive Parking Study (1993, Wilbur Smith Associates)
- The 1999 Comprehensive Parking Study (1999, Wilbur Smith Associates)
- The Downtown Mountain View Affordable Family Rental Housing Development Parking Study (2009, Wilbur Smith Associates)
- The 100-200 West Evelyn Avenue TIA (2010, Fehr & Peers Associates)
- The 455 West Evelyn Avenue Traffic Impact Analysis (Minton's Residential Development)

All of the above studies were undertaken for different purposes and covered slightly different areas. Nonetheless, all contain a variety of findings relevant to the current study. Foremost among these is a comparison of historical peak occupancy rates for public parking in the core of downtown. All of the studies consistently showed a "double peak" pattern of parking utilization with high parking occupancy levels observed weekdays during the midday and on Friday evenings.

Inventory of Existing Parking Supply and Regulations

Task 1 included a detailed inventory of all City-owned off-street public parking and all on-street parking within a study area bordered by the outer boundary of West Evelyn Avenue, South Shoreline Boulevard, West El Camino Real, and Calderon Avenue. This area includes the downtown's commercial core along and around Castro Street as well as surrounding residential neighborhoods to the east, west, and south. For the purposes of data collection, analyses, and presentation, this large study area has been divided into a "core" and a "periphery." The study area, its division into a core and periphery, and all of the on and off-street facilities included therein, are shown in Figure S.1 on the following page.

All told, the supply of public parking within the designated study area includes 5,669 public parking spaces; 3,558 on-street spaces and 2,111 off-street spaces. Table S.1 shows the division of parking spaces between the core and periphery as well as each area's percentage of the total, study area parking supply.



Legend

Core Area

Total Spaces 2,855
Off-Street 1,729
On-Street 1,125

Periphery

Total Spaces 2,814
Off-Street 382
On-Street 2,432

160 Total spaces in lot
Parking Structure or Underground Lot
Other lots

Parking district boundary
Caltrain station
VTA station

NORTH
500 1000 FEET

Figure S.1 Study Area

Table S.1: All Downtown Public Parking

Parking Type	Study Area		Core		Periphery	
	#	%	#	%	#	%
On-street	3,558	63%	1,126	39%	2,432	86%
Off-Street	2,111	37%	1,729	61%	382	14%
Total	5,669	100%	2,855	100%	2,814	100%

As the table indicates, the core and periphery each include about half (just over 2,800) of the total 5,669 parking spaces in the study area but differ substantially with respect to the type of parking they contain. Nearly two-thirds of the public parking in the core is located in off-street lots and structures. Parking in the periphery, by contrast, is concentrated largely on-street and includes only a handful of off-street public lots.

Much of the on- and off-street public parking provided in the downtown study area is subject to time limits or other use restrictions. Restrictions vary significantly in the time they allow, the span of hours they are active, and the days they apply. Most of the on-street parking supply within the core study area is subject to 2-hour time restrictions. Exceptions include on-street parking along Castro Street that is limited to 1 hour, segments on West Evelyn Avenue and Church Street that have other restrictions and a few segments on Villa Street, Bryant Street and Mercy Street that are limited to less than one hour. On-street parking in the periphery is mostly unrestricted but there are segments of 5-hour parking on West Evelyn Avenue, Calderon Avenue, Villa Street, Bush Street, and Dana Street in the area near the Caltrain/JPB Lot.

As Figure S.1 shows, the majority of public off-street parking is located in the core and most of this parking is subject to a 2-hour time restriction. In the periphery, public off-street parking is largely unrestricted but is located in lots generally associated with specific uses (City Hall, Eagle Park, and the Library). A full discussion of the current system of parking time restrictions including detailed maps is included in Part Two.

In addition to the on-street and City-owned lots downtown, the existing conditions analysis also involved an inventory of loading zones, bicycle parking facilities, the Caltrain/JPB parking lot, and select private lots. The results of this effort are presented in detail in Part Two.

Parking Utilization

During late September and early October, parking utilization data was collected at all of the core and periphery parking facilities described above. This data paints a detailed picture of how public parking is currently used in and around downtown Mountain View. Prior to a discussion of the major findings of this effort, it is important to briefly define a number of terms that are used when discussing parking utilization here and throughout the report.

- **Occupancy:** The number of cars parked in a specific area, lot, or blockface during one period of observation. Often expressed as the percentage of the total physical supply that is occupied by parked cars.
- **Practical Capacity:** The occupancy level or number of vehicles that can be parked in a facility or area before it becomes difficult for a driver to find a space without having to circle or “cruise” for parking. Practical capacity is typically set at an 85% occupancy level. For on-street parking this equates to roughly 1 vacant space per blockface.

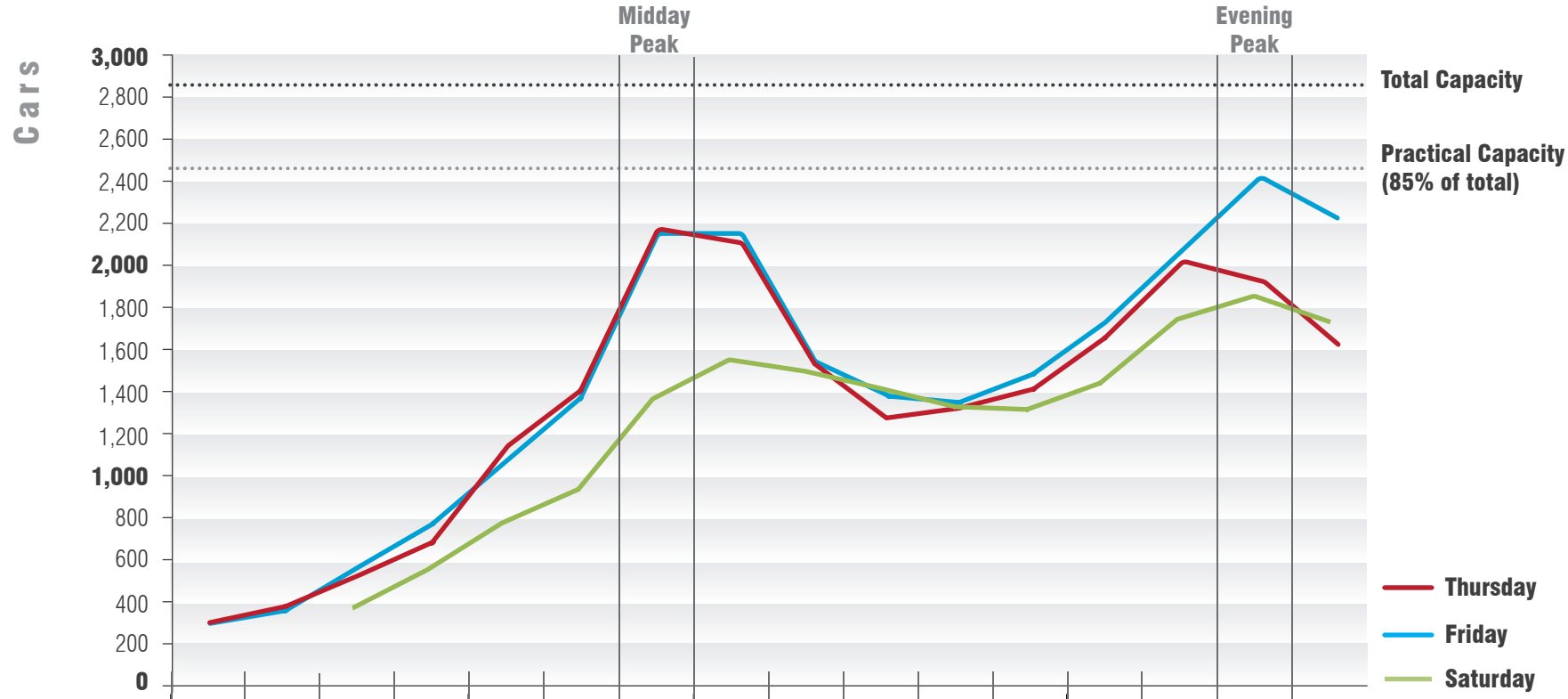
- **Peak:** The time period associated with the highest observed level of occupancy in a specific area or parking facility. In Mountain View, two overall peaks in parking activity were observed; one on Thursday from 12:00pm-1:00pm, and one on Friday evening from 8:00pm-9:00pm.
- **Duration of Stay:** Refers to the length of time a vehicle is parked in a specific parking space.
- **Parking Event:** A parking event refers to each instance where a single, unique vehicle is observed parked in a single, unique space. A single vehicle could thus be involved in multiple parking events over the course of a single day if it was reparked.

Occupancy levels in the core of downtown Mountain View fluctuate significantly throughout the day. Figure S.3 presents a combined line graph and table showing the overall, hourly occupancy level for the entire downtown public parking supply for the Thursday, Friday, and Saturday when data was collected. The table included in Figure S.3 also shows the division between on-street and off-street occupancy levels in the core area.

Similar to the utilization trends seen in past parking studies, this data shows a clear "double peak" in parking activity in the downtown core that includes both midday and evening periods of high demand. The highest overall midday peak was observed on Thursday between 12:00pm and 1:00pm when the downtown's parking facilities were 77% occupied and the highest evening peak was observed between 8:00pm and 9:00pm on Friday when the overall occupancy level reached 85%. In general, parking occupancy rates appeared to be similar during the day for Thursday and Friday. Parking occupancy rates on Saturday were observed to be lower than both Thursday and Friday during the day but exceed Thursday's rates during the evening hours. The overall occupancy figures presented in Figure S.3 indicate that most of the time there is ample public parking available in the downtown. At certain times of day, however, parking usage is high enough that it approaches (or in the case of Friday evenings, reaches) the overall practical capacity level of 85%.

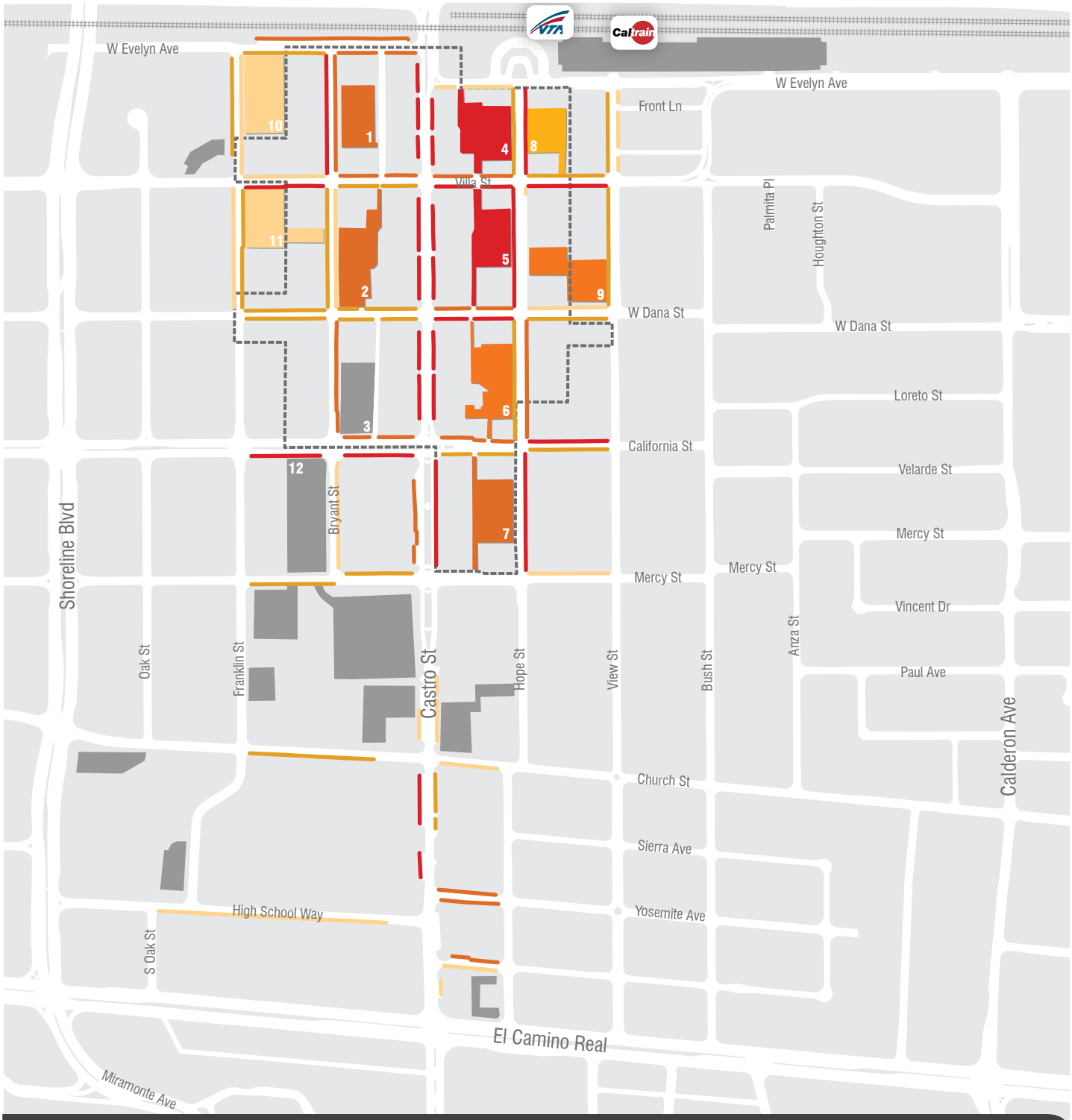
While the overall parking supply only briefly approaches an 85% practical capacity level, parking occupancies are not evenly distributed across all downtown facilities. Certain parking lots and streets have ample parking available throughout the day while others are completely full for hours at a time. During the Thursday midday peak, for example, the overall occupancy for the downtown is below practical capacity at 77%, but nearly all of the downtown's off-street public lots are at or above an 85% occupancy rate. Only Lot 11 and the new parking structure (Lot 3) have a significant amount of capacity remaining. This skewed distribution of parking availability means that a downtown visitor trying to park should ultimately be able to find parking but will spend time "cruising" for a space or will be required to park at some distance from their intended destination.

Finally, Figure S.4 presents a different view of the core occupancy data that provides information on parking "hot spots" or areas where parking demand is sustained at high levels throughout the entire day. Figure S.4 was generated for Friday, the day that was observed to have the overall highest levels of parking demand. In the figure, lots and blockfaces are colored based on the number of hours during the day that each was observed to be at or above its practical capacity (85% full). As the figure suggests, much of the parking along and adjacent to Castro Street was observed to be impacted throughout the entire day. Similarly, Lots 4 and 6 had sustained high occupancies as did lots 1, 2, and 7. The figure also shows that the temporary lots (Lots 10, 11, and 13) along the western edge of the downtown were



Space Type & Day	Total Spaces	6am-7am	7am-8am	8am-9am	9am-10am	10am-11am	11am-12pm	12pm-1pm	1pm-2pm	2pm-3pm	3pm-4pm	4pm-5pm	5pm-6pm	6pm-7pm	7pm-8pm	8pm-9pm	9pm-10pm
Thursday																	
Thursday Overall	**2855**	**12%**	**14%**	**20%**	**25%**	**41%**	**50%**	**77%**	**75%**	**55%**	**45%**	**47%**	**50%**	**59%**	**71%**	**68%**	**58%**
Thursday On-Street	1126	22%	26%	31%	36%	44%	52%	73%	69%	52%	48%	50%	54%	62%	70%	66%	58%
Thursday Off-Street	1729	5%	7%	13%	18%	39%	49%	79%	78%	56%	44%	46%	48%	57%	72%	69%	58%
Friday																	
Friday Overall	**2855**	**11%**	**14%**	**21%**	**28%**	**39%**	**49%**	**76%**	**76%**	**55%**	**49%**	**48%**	**53%**	**61%**	**74%**	**85%**	**79%**
Friday On-Street	1126	21%	25%	32%	35%	43%	52%	73%	70%	55%	50%	48%	52%	63%	73%	79%	77%
Friday Off-Street	1729	5%	6%	14%	23%	36%	48%	78%	80%	55%	49%	48%	53%	60%	74%	89%	80%
Saturday																	
Saturday Overall	**2855**	**NA**	**NA**	**13%**	**19%**	**27%**	**33%**	**48%**	**54%**	**52%**	**49%**	**46%**	**46%**	**50%**	**61%**	**65%**	**60%**
Saturday On-Street	1126	NA	NA	22%	30%	38%	43%	50%	58%	55%	57%	53%	51%	53%	66%	70%	68%
Saturday Off-Street	1729	NA	NA	8%	13%	20%	26%	46%	51%	50%	45%	42%	42%	48%	57%	61%	55%

Figure S.3 OVERALL CORE AREA PARKING OCCUPANCY



Legend

Hours per day facility at or above capacity (85% Occupied)

- 0 hours
- 1 - 2 hours
- 3 - 4 hours
- 5 - 6 hours
- 7 hours and up

- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure S.4 Total Hours At or Above Capacity-Core (Friday)

generally less impacted throughout the day than the more central, permanent lots. The map also shows that Parking Structure 3 was never full at any point during the day.

Parking Duration

While occupancy data is a key metric describing how parking in the downtown is used, occupancy percentages provide only a series of snapshots of how "full" different parking facilities are at different points in time. To truly understand current parking usage in the downtown, it is equally important to develop an insight into how long parkers stay, how employee permits are used, and to what extent "reparking" or "shuffling" of cars may be occurring. Because license plate data was collected on an hourly basis for Thursday and Friday, it is possible to track these metrics in a variety of ways. Data related to parking duration and reparking can become quite complex, especially when presented for both a Thursday and Friday. The following is a summary of key findings. The full, detailed analysis of this data is provided in Part Two.

Over 16 hours of data collection, 9,512 unique "parking events" were observed in the core downtown on Thursday and 10,364 were observed on Friday. A unique parking event equates to every instance where a unique license plate was observed to be parked in a particular lot, garage, or blockface. Table S.2, below, summarizes these parking events based on their observed length in hours. The table shows that the majority of all parking events (over 50% on both days) lasted 1 hour or less. The average length of a typical parking event, however, was 2.3 hours on both days (the average takes into account both the large number of short term events as well as the smaller number of long events). Table S.2 also shows that the overall spread of parking duration events is very consistent across both of the days observed as well as between on- and off-street facilities.

Table S.2: Weekday Parking Duration

		Parking Event Length (Hours)										
Parking Day & Type	**Total Events**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10 +**	**Avg event length**
On-street												
Thursday	4,101	59%	19%	8%	3%	2%	2%	1%	1%	1%	3%	2.3 hrs
Friday	4,349	54%	25%	7%	5%	2%	1%	1%	1%	1%	3%	2.2 hrs
Off-street												
Thursday	5,411	56%	18%	8%	4%	3%	3%	2%	2%	2%	2%	2.3 hrs
Friday	6,015	54%	23%	6%	4%	3%	2%	2%	2%	1%	2%	2.3 hrs
Overall												
Thursday	9,512	57%	19%	8%	4%	3%	2%	2%	2%	1%	3%	2.3 hrs
Friday	10,364	54%	24%	7%	4%	3%	2%	2%	2%	1%	2%	2.3 hrs

In general, duration of stay patterns varied as expected across on-street facilities with the average duration of stay observed generally varying in accordance with the posted time restriction. 1-hour restricted spaces exhibited shorter average stays while unrestricted spaces exhibited the longest average stays. In off-street lots, duration of stay patterns were surprisingly consistent from facility to facility. Average stays for nearly all lots hovered around 2 hours and did not seem to vary substantially based on whether the lot allowed employee permits (see discussion of permit usage below). During enforcement hours, Lot 11 was observed to have a longer average stay as would be expected with its longer time limit (3-hours vs. 2-hours for most lots). Surprisingly, Lot 10, an unrestricted parking lot signed for Caltrain overflow parking, did not show a higher rate of long term parking than any of the

other core lots in the downtown. The unexpectedly even distribution of parking durations among off-street facilities suggests that long term parkers are well distributed throughout the downtown but also points to potential enforcement issues since the rate of long term parking (3+ hours) is higher than would be expected in lots that do not allow permits. For example, Lots 2, 4, and 6 are all restricted to 2-hour parking and do not allow employee permits. Despite these restrictions, between 10% and 24% of parking events occurring on these lots during enforcement hours (8:00am-5:00pm) lasted 3 hours or longer.

Employee Permits

Employee permits were also observed as part of the existing conditions study of parking duration. Businesses and employees located within the Parking Maintenance Assessment District (PMAD) are eligible to purchase permits that allow them to park for extended periods of time in certain downtown public facilities. The City's website specifies that permit holders are eligible for extended parking on the top floors of the two parking structures (Structures 1 and 3) as well as Lots 6-9 and 11. Lot 5, however, also has posted signage specifying that permit holders are eligible to use the facility. Data collected on permit usage indicates that with the exception of Lot 8, and to a lesser degree Lot 7, permit users are fairly well distributed and do not account for an overwhelming or even significant proportion of cars observed in each lot. Thus with the possible exception of Lot 8 (which had a very high rate of permit usage), the high occupancy rates observed in the downtown's off street parking are not driven by employee permit usage. As expected, vehicles with permits were observed to park for substantially longer amounts of time than the general population of parking vehicles. Of the 374 permitted vehicles observed on Thursday, the average parking duration was 3.9 hours during the span of enforcement hours when permit parking is in effect (8:00am-5:00pm). The average for all cars on the same lots during the same time period was 1.9 hours.

Reparking and Parker "profiles"

License plate data was also used to track instances of reparking. In a general sense, reparking was defined to have occurred whenever a license plate was observed to have moved from one parking lot or blockface to another. However, since the goal of tracking reparking was to develop a sense of whether downtown visitors and employees were moving their cars to avoid time restrictions, "reparking events" were only counted if they conformed to a fairly strict set of conditions. Thus the "reparking events" discussed below all occurred during enforcement hours, did not exhibit significant gaps of time between each observation of the same license plate, and were all made up of short "contributing" events (the reparking events shown here involve vehicles that changed location every one or two hours, suggesting that they may have been constrained by a time limit).

This analysis revealed that between 500 and 600 vehicles were observed reparking during enforcement hours on Thursday and Friday. Most of these cars reparked only one time, but a sizeable number reparked twice and a handful reparked 3 or more times. The reparking analysis was combined with more general observations of parking duration to develop an overall estimate of the number and "type" of parking vehicles observed in the downtown. Finally, Table S.3 organizes all of the adjusted parking events observed into three "parking profiles." The "customer" profile includes vehicles that were observed parked for a continuous span of four hours or less. The employee profile includes vehicles that were observed for a continuous or nearly continuous span of 5 hours or more. The "other" profile includes vehicles that were observed multiple times throughout the day but had multiple or large gaps

between observations. These vehicles could potentially be downtown residents or downtown employees who do not stay onsite for the entire workday.

Table S.3: Weekday Parkers by "Parking Profile"

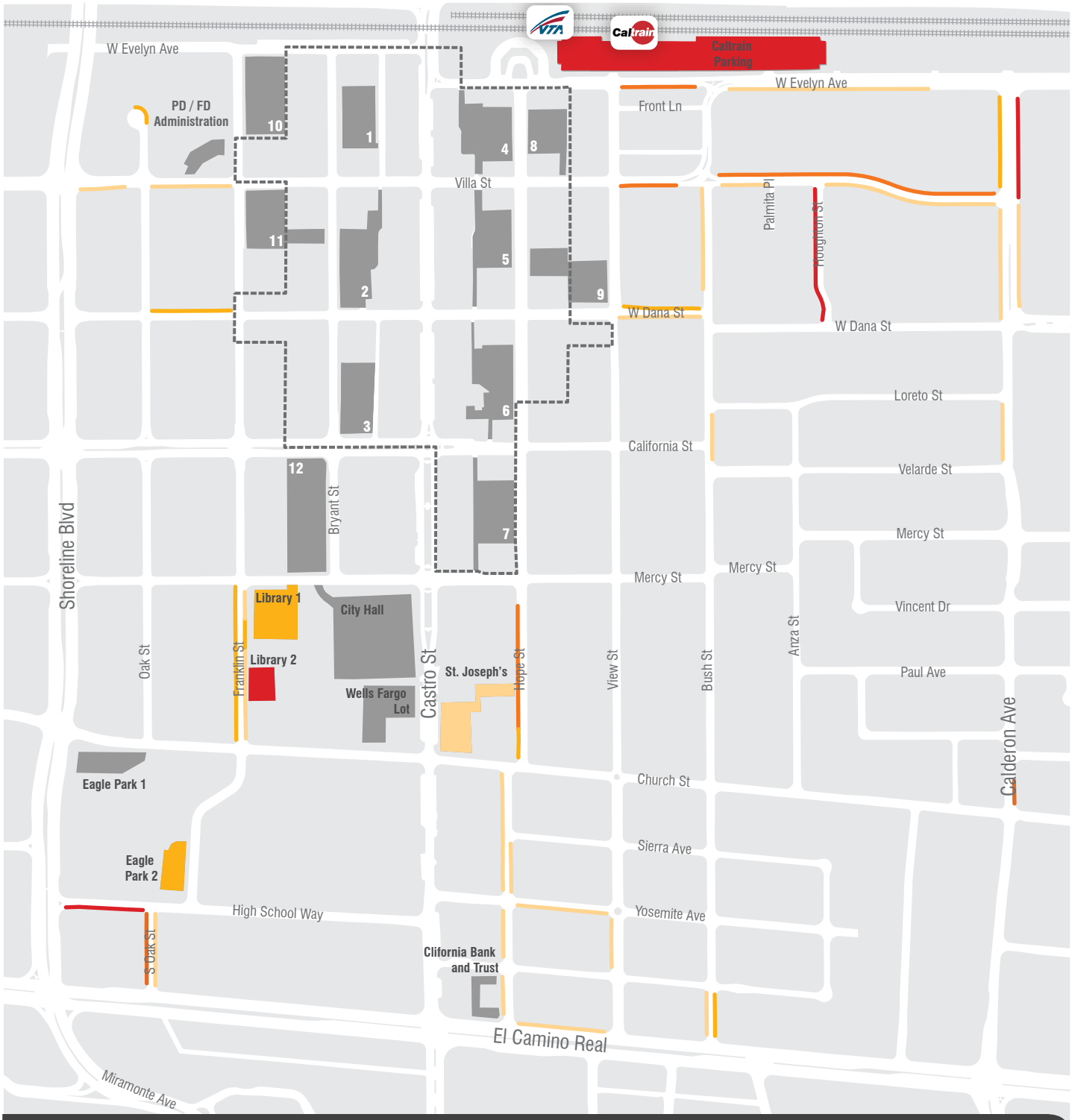
Parker Category	All Parking Events	"Customer" profile		"Employee" profile		"Other" profile	
		#	%	#	%	#	%
Thursday							
Revised count (adjusted for reparking)	8,908	7,091	80%	1,377	15%	440	5%
Friday							
Revised count (adjusted for reparking)	9663	7800	81%	1476	15%	387	4%

It is critical to note that these profiles are simply a shorthand way of describing the different parking patterns outlined above. They are, at best, only rough approximations of the actual number of employees or customers in the downtown. Nonetheless, they are a precise calculation of the number of vehicles that conform to a particular set of observed parking behaviors and it is these patterns of parking behaviors that must ultimately be managed and accommodated.

Parking in the Periphery

Parking data was collected for the downtown periphery on Thursday and Friday, October 7th and 8th, 2010. Data collection in the periphery was less intense than in the core and included semi-hourly and hourly occupancy counts between 6:00am and 10:00pm on all facilities as well as three cycles of license plate recordings throughout the day (one in the morning between 6:00am and 9:00am, one in the afternoon between 12:00pm and 2:00pm, and one in the evening between 6:00pm and 8:00pm). The following summary presents the key findings related to parking utilization in the periphery. More detailed analysis is included in Part Two of the report including small, sub-area discussions that use and rely more heavily on the license plate data collected.

Parking occupancy data for the periphery is more difficult to present as a series of summary metrics due to the large size of the area and variety of land uses and parking types contained within. Most of the parking in the periphery is made up of on-street spaces and this parking as a whole rarely even reaches an aggregate 30% occupancy level and fluctuates only slightly during the day. The supply of off-street parking in the periphery is fairly small and includes the City Hall parking lot, the two Library parking lots, the parking lots at Eagle Park, and the Police and Fire Department Administration visitor's lot. Unlike the on-street parking in the periphery, many of the off-street lots do experience fairly high occupancy rates and exceed their practical capacity at times during the day. Both the Library surface lot and underground garage become quite full during the day and exceed the 85% practical capacity limit for multiple hours. Similarly, although the City Hall Lot was never observed to reach its capacity, it hovered in the 70%-80% occupancy rate for much of the day.



Legend

Hours per day facility at or above capacity (85% occupied)

- 0 hours
- 1 - 2 hours
- 3 - 4 hours
- 5 - 6 hours
- 7 hours and up

- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure S.5 Total Hours At or Above Capacity - Periphery (Thursday)

Figures S.5 is similar to Figure S.4 and shows the number of hours on Thursday where individual blockfaces and lots in the periphery were at or above their practical capacity. As the figure suggests, the majority of blockfaces never exceed their capacities but there are several "hot spots" of activity scattered throughout the periphery. These hot spots include Franklin Street near the Library as well the Library lots themselves, the parking along and around Hope Street just north of El Camino Real, and most prominently, a number of streets near the Downtown Mountain View Caltrain/JPB Station. Part Two of the report contains further, detailed analysis of parking utilization at and around these specific "hot spots" including an analysis of duration of stay data based on license plate recordings.

Although there are some on-street hot spots near the Caltrain/JPB Station and the Library, it is important to notice that the vast majority of streets in the periphery never reach their practical capacities. The absence of high occupancy levels on streets surrounding the downtown suggests that employee and commercial spillover parking from the downtown is not currently a widespread problem (although localized instances may exist).

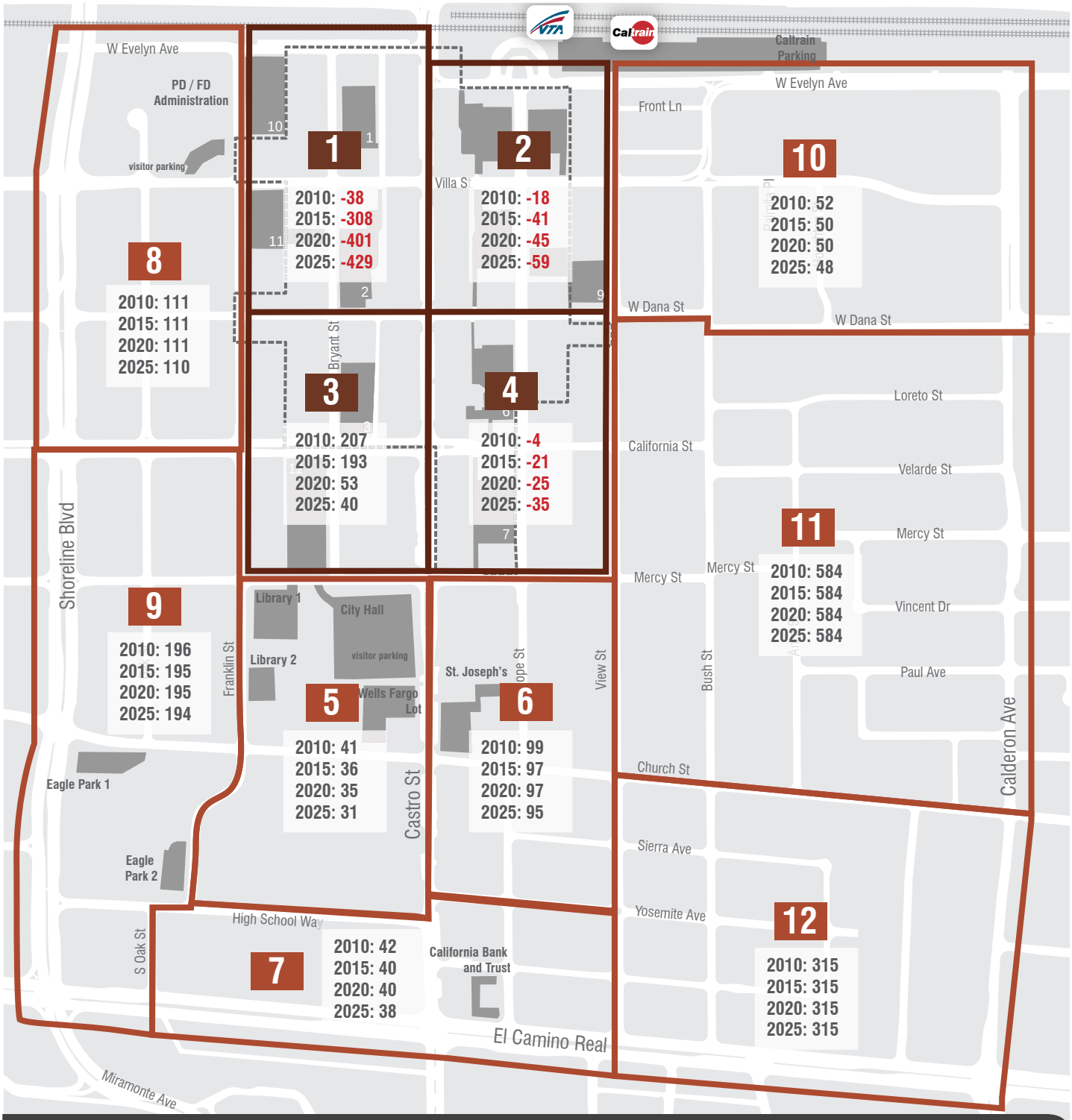
Projecting Future Parking Demand

The existing conditions analysis established a detailed baseline of current parking activity in the downtown. The analysis developed in this first step of the study was then used as the basis for modeling downtown parking demand in future years.

Modeling future parking demand at public parking facilities in downtown Mountain View was a multistep process with results resting on an interrelated set of assumptions and data inputs. The ultimate purpose of modeling parking demand in future years is to determine whether the available parking supply will be sufficient to accommodate anticipated needs and to understand the magnitude of any projected parking surplus or deficit. For the purposes of this study, a parking demand model was developed in a flexible format that allowed different assumptions to be tested and revised. Accounting for new development in and around the downtown, use of parking in-lieu fees, assumptions about the downtown's economic performance, the removal or addition of new parking supplies, changes in how people travel to the downtown and the adoption of new methods for managing parking are all factors that can impact the future demands placed on the public parking supply and were considered in the modeling process.

The modeling process began with the development of a 2010 "baseline" condition developed from the data observed during the existing conditions analysis. This baseline condition was then projected forward to develop estimates of parking supply, demand, deficits, and surpluses for the years 2015, 2020, and 2025. These estimates of parking growth provided important input for subsequent study tasks related to financial analysis and the model is designed to be further refined and adjusted as new parking supplies and management strategies are considered. Finally, the analysis also considers several alternative demand scenarios as a means of understanding how parking demand projections might vary based on different assumptions about future conditions and parking management strategies.

Part Two of the report includes a detailed discussion of model inputs, assumptions, and results. The following is a brief summary of some of the key findings. Figure S.6 and S.7 on the following pages show current and projected parking surpluses and deficits by geographic zone of the downtown. The numbers shown for each year in each zone show whether the projected parking demand in that zone either is within or exceeds the corresponding supply of public parking (both on- and off-street). Much of the following summary focuses on the overall aggregate projections for the 16 block commercial core of the downtown (zones 1, 2, 3, and 4 in Figures S.6 and S.7).



Legend

- Primary downtown parking zones
- Other study area parking zones
- Parking lots

Year: Parking surpluses and deficits

2010: #
2015: #
2020: #
2025: #

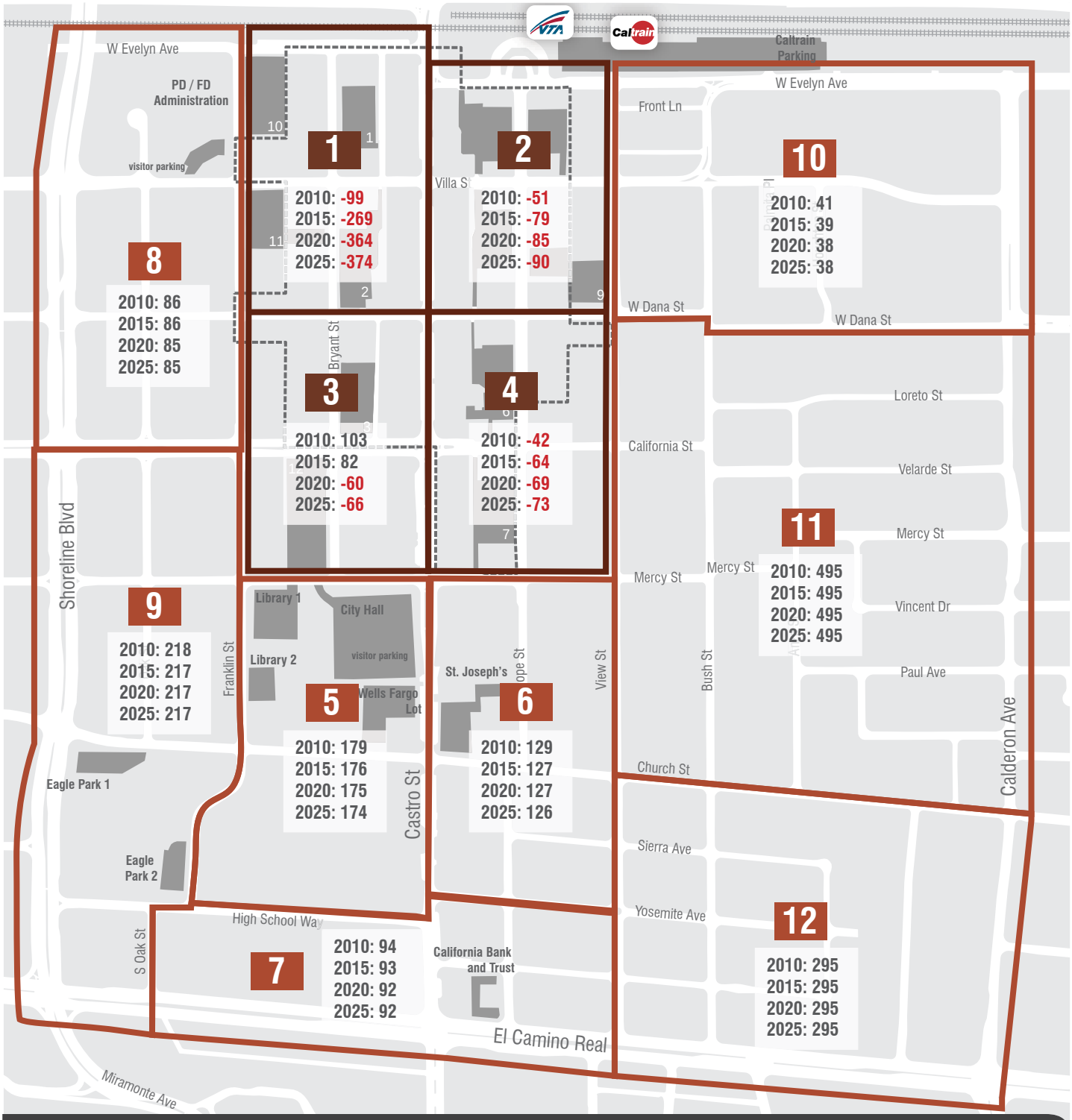
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure **S.7** Parking Surpluses and Deficits, Thursday Midday Peak



Legend

- Primary downtown parking zones
- Other study area parking zones
- Parking lots

Year: Parking surpluses and deficits

2010: #
2015: #
2020: #
2025: #

- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure **S.6** Parking Surpluses and Deficits, Friday Evening Peak

Assuming a target 85% occupancy level for all facilities, there is a 146 space parking surplus in the 16 block commercial core of the downtown bordered by West Evelyn Avenue, View Street, Mercy Street, and Franklin Street during the midday Thursday peak during the 2010 / current "baseline" model year (zones 1, 2, 3, and 4 in figures S.6 and S.7). In the same area there is currently a 90 space parking deficit during the Friday evening peak. By 2015, the 16 block downtown core is projected to have an overall parking deficit of 178 spaces during the Thursday midday peak and a deficit of 330 spaces during the Friday Evening peak. This deficit is primarily driven by the anticipated removal of Lot 10 from the parking supply combined with the construction of new office developments that rely heavily on parking in-lieu fees to satisfy their parking requirements.

By 2020, the overall parking deficit in the 16 block core of the downtown is projected to have increased to 417 spaces during the Thursday midday peak and 578 during the Friday evening peak. The increase in the parking deficit is primarily driven by the assumption that temporary parking lots 11 and 12 will be developed and removed from the parking supply prior to 2020. By 2025, the parking deficit in the 16 block core of the downtown is projected to increase to 483 spaces during the Thursday midday peak and 603 during the Friday evening peak. This increase in the projected parking deficit does not assume any specific supply changes or parking in-lieu and is primarily driven by assumed background growth in the demand for parking.

There is currently a substantial surplus of parking in areas outside of the 16 block commercial core. Parking demand in these areas is not projected to increase significantly in future years nor is the parking supply in these areas expected to change. As the parking deficit in the 16 block core of the downtown grows, however, the potential for widespread spillover parking in these areas increases. It is also critical to note that the model assumes that, absent the direct payment of in-lieu fees, all new developments will construct sufficient parking to accommodate the parking demand generated by their users (in accordance with all of the City's applicable ordinances).

Finally, several alternative scenarios related to higher and lower rates of economic growth and changes in how individuals travel to the downtown were evaluated to determine the contribution of these variables towards future parking deficits. The analysis revealed that the 16-block commercial core of the downtown is still projected to run a substantial parking deficit in all future years. This fundamental deficit is driven by the anticipated loss of temporary parking lots and increased demand due to developer reliance on in-lieu parking. The alternative scenario analysis did reveal, however, that changes in assumptions about future economic growth and mode share can significantly impact the size of the anticipated parking deficit. The different combinations of scenarios evaluated resulted in overall future parking demand levels that ranged between 8.8% below base case projections to 4.8% above base case projections by the year 2025. These percentage changes in parking demand have the potential to either increase or decrease the anticipated 2025 core downtown parking deficit by anywhere between 100 to over 300 spaces. Holding economic growth considerations constant, if the City were able to achieve an aggressive 7.5% reduction in the rate of driving to the downtown over the next 15 years, a parking deficit would still exist but it would be over 175 spaces lower than that projected for the base case scenario.

Parking Finances

The third task in the Downtown Mountain View Parking Study included a variety of loosely related analyses that focused in on the details and financial dimensions of specific parking management programs. This includes an analysis of several existing parking programs and processes as well as a consideration of potential future changes in the parking management system. Much of the work in this portion of the analysis focused on analyzing and quantifying the financial and economic dimensions of parking programs. Parking has the potential to generate substantial amounts of revenue for the City through pricing, permit sales, and citations, but maintaining and managing parking is also a significant source of costs. Understanding and quantifying the financial dimensions of different parking programs is critical to making informed policy choices. The following briefly summarizes the analyses and findings of the financial and program feasibility analyses developed for this portion of the study.

The Parking Maintenance Assessment District

Downtown Mountain View's Parking Maintenance Assessment District (PMAD) currently plays a major role in financing and maintaining the downtown's parking infrastructure. The PMAD has existed in its current form since 1979 and collects annual assessments totaling $158,000 from property owners within the district. These assessments are combined with other revenue sources to pay for the maintenance of the downtown's parking lots and structures. The assessment was increased to its current level of $158,000 in fiscal year 1997 and has been held constant since then. Assessments currently cover only half of the PMAD's expenditures. As maintenance costs increase in the future this proportion will decrease assuming that the assessment continues to be held constant.

There are several approaches that could be pursued to modify, expand, or add to the PMAD so as to provide a financial mechanism that better covers the costs of parking maintenance. These include:

- Expanding the PMAD Boundaries.
- Increasing the PMAD Assessment to more adequately cover existing and future PMAD costs.
- Overlaying a new Parking District on the PMAD.
- Creating a totally new Parking District.

None of the above is an easy option and all present significant risks and complications that are discussed in detail in Part Two of the report.

The analysis of the PMAD ultimately yielded several key conclusions. First, the stipulations of California's Proposition 218 have greatly limited the value of the existing PMAD. In order to expand the PMAD or increase the amount of the assessment to cover the costs of operating and maintaining the parking facilities, the City will have go through the process of conducting a formal vote of property owners to approve the change. This approach has the inherent risk that the property owners could vote against the modified PMAD, which would result in the abolishment of the PMAD altogether.

Second, it may be possible to annex or add new properties to the PMAD. It would be essential, however, to do so in a way that did not impact the parking benefits or the amount of the assessment paid by current property owners in the PMAD. A reasonable buy-in fee would have to be paid to the PMAD and the new property owners would have to pay the annual assessment. If a property outside the PMAD but within the revitalization area were to redevelop, a condition of approval could be a requirement to join the PMAD.

Any kind of an overlay district or a new district will require a vote per the stipulations of Proposition 218. Such a vote is unlikely to succeed unless there is a motivated group of downtown property owners or

businesses that would be willing to support a new assessment and to assist in the effort to secure the approval of the required majority. This approach has been used successfully in other cities when the city is willing to give the downtown business interests control over the ways in which the assessment monies are utilized.

Finally, property owners outside of the PMAD have indicated a desire to purchase the permits that allow all day parking in the public off-street facilities downtown. Allowing this to occur would generate additional revenue for the PMAD. It is likely that many of these parkers are already parking in the public off-street facilities, so offering the permits to be sold to those outside the PMAD should not cause a significant increase in usage. However, to be fair to those who are in the PMAD, the price of the permits for those outside the district boundary would need to be set higher than the normal permit price. It may also be necessary to notify the property owners within the PMAD of this new program. It will be important that they understand that by increasing the permit revenues the eventual need to increase the assessment will be diminished.

Revenue and Expenditure Analysis of Current and Potential Parking Programs

The evaluation of the PMAD was followed by an extensive analysis of current parking costs and revenues and a projection of those costs and revenues over the next 30 years. The financial feasibility of potential residential permit programs and parking pricing in the downtown were also analyzed over a 30 year timeframe (assuming a hypothetical implementation over the next 1 to 6 years). This financial analysis yielded a variety of critical findings that will prove useful in guiding all future discussions regarding parking in the downtown.

For fiscal year 2009-2010, audited PMAD revenues totaled just under $431,000, expenditures were $346,000 and the overall district was a net revenue source of nearly $84,700. General downtown parking revenue sources (not included in the PMAD budget) included an estimated $128,670 in parking citation revenue collected in the downtown study area. Downtown parking related expenses outside of the PMAD budget in 2011 included an estimated $73,000 in enforcement costs and an additional $11,700 in citation processing fees. General parking maintenance expenses in the downtown (not part of the PMAD budget) also included some $353,900 in sweeping costs, signage maintenance, and relevant portions of the Castro Street Maintenance Program. For Fiscal Year 2010-2011, if all parking revenues and expenses are comingled, parking programs in the downtown currently operate at an estimated net deficit of approximately $225,000 annually.

If current parking revenues and expenditures are projected forward over the next 30 years with no other changes assumed, the size of the overall deficit will continue to grow. The base case analysis projects that the PMAD's budget surplus will continue over the next 30 years, but will diminish as time goes on. This occurs because the PMAD's assessment revenue is assumed to be held at a constant level ($158,000 annually) even as operating expenses are projected to increase steadily in future years. It should be noted that the projection of an ongoing surplus for the PMAD is highly sensitive to changes in assumptions about future rates of cost escalation and expenditures and could easily be erased if costs increase unexpectedly. Parking enforcement activities, when viewed in isolation, do generate a surplus of revenue (an estimated $44,000 in fiscal year 2011). Parking enforcement levels and citation rates in Mountain View are relatively low, however, and any revenue surplus generated by these activities is insufficient to offset the costs of parking maintenance in the downtown. Within this base case analysis, general parking operations in the downtown will continue to operate at a substantial deficit in future years, largely driven by maintenance costs.

An alternative financial scenario was developed that examined the revenue and cost implications of initiating a small residential permit parking program in the neighborhood roughly bordered by West Evelyn Avenue, View Street, Calderon Avenue, and Mercy Street. This kind of permit program would be one mechanism to address the concerns related to spill over parking from the Caltrain/JPB station and commercial activities in the downtown. The analysis revealed that although the program would generate revenues through permit sales and increased citations it would not be revenue neutral and would require a subsidy of some $40,000 a year to operate. Program initiation costs including materials and staff time were estimated to be some $113,000 in the assumed program initiation year of 2012.

It is important to note that although the modeled RPP program was developed based on data from the City of Mountain View and standard assumptions about how such programs typically operate it is only an example and not a recommended approach to implementation. Any move to implement an RPP in or around downtown Mountain View should include additional outreach and coordination with public works staff and would involve the preparation of a more detailed policy and procedure document. The development of an RPP program in Mountain View should also be undertaken from a “city-wide” perspective and should thus result in the development of a model process that could be applied in other areas of the City based on resident requests.

A second alternative financial scenario was developed that examined a more complex residential permit program paired with a comprehensive pricing (metering) program in the downtown (with all components of both programs phased in through 2016.) The expanded RPP program modeled in this scenario is expected to operate at a deficit but this loss would be more than offset by the increased revenue generated by the parking pricing program (both directly and through increased parking citations). In fiscal year 2013, when the first phase of the pricing program was modeled as becoming active, some $686,000 in new revenue is projected from the pricing program alone. Revenues from metering and new citations are projected to rise to $1,550,000 when the full parking pricing program is implemented in 2016. Although pricing parking would generate a large sum of revenues, costs will also increase substantially. Annual operational costs for the pricing program alone were projected to be $288,000 in the first phase and $865,000 in the second phase. Program initiation costs would also be substantial, amounting to $113,000 in 2012 for the first phase of the RPP program, $693,000 in 2013 for the initiation of the first phase of the pricing program, $220,000 in 2015 for the second phase of the RPP program, and $1,186,000 in 2016 for the final phase of the pricing program. All told, however, the net revenue effect of pricing and increased enforcement will be positive with all downtown parking programs (general maintenance, PMAD, RPP, and pricing) operating at a combined estimated $291,000 surplus in FY 2017 once the program stabilizes and initiation costs have been accounted for. This surplus increases substantially as meter rates rise over the 30 year period of analysis.

As noted above, the analysis of existing parking programs revealed that parking enforcement in the downtown is currently quite light. Discussion with the Mountain View Police Department revealed that most enforcement activities in the downtown are currently targeted towards increasing parking turnover during the peak, lunchtime period. All future parking programs modeled in this analysis

assume an expanded approach to parking enforcement and this is one of the reasons substantial new revenues from parking citations were assumed to be generated. This assumption appears to be in line with data from neighboring cities. In Fiscal year 2011, Palo Alto budgeted citywide revenue from parking citation in excess of $1.5 million[2]. Similarly, the City of San Mateo budgeted over $1 million[3]. For the same time period, by contrast, the City of Mountain View budgeted just over $200,000 on a citywide basis. Further investigation of enforcement issues is a critical next step in developing parking management priorities for the downtown.

Analysis of Pricing and Residential Permit Parking

Following the financial feasibility analysis of residential permit and pricing programs, a supporting analysis describing policy and program implementation issues related to these two parking management tools was also assembled. The review found that reactions to the introduction of parking pricing in commercial districts and downtown vary substantially based on several factors. Similarly, detailed research quantifying on the economic impacts of parking pricing in downtowns is varied and findings are highly dependent on the location studied. In general, pricing parking or increasing parking costs will cause shoppers, employees, and commuters to change their parking behavior. Drivers will seek out free or lower priced parking alternatives if they are available but will not necessarily divert their trips entirely. The presence of competing shopping districts with free parking is a significant factor in determining whether shoppers will actually divert trips in response to paid parking. Shoppers are less sensitive to pricing than commuters, employees, and other long-term parkers who utilize parking on a consistent daily basis for long stretches of time and are thus more economically impacted by pricing. Parking pricing can improve the availability of parking, and particularly shorter term parking in commercial districts and downtowns. In congested areas this can have a positive economic impact if it improves accessibility for shoppers and makes it easier for them to find parking quickly near their destination.

The analysis of residential permit parking (RPP) programs discussed the programs in detail and described how they have been implemented in a number of Northern California cities. RPP programs are a commonly used parking management tool for limiting parking spillover impacts in residential neighborhoods. Many Bay Area and Northern California cities use these programs although all tend to differ slightly in how they are implemented and administered. Most (but not all) cities spell out the requirements for RPP district formation in an ordinance and assume that the process will be initiated by the residents themselves. Typical requirements for RPP initiation include a standard of evidence proving that the neighborhood is impacted by non-resident parking and documentation of agreement or interest in the program by a majority of neighborhood residents. Time limits and enforcement hours vary widely by program and should be developed in a way that is as tailored as possible to limiting the specific undesirable parking behaviors that are the purpose of the program. Most programs are developed in a way where non-permit holders are subject to time limits, but some programs prohibit non-permit

[2] City of Palo Alto, 2011 Adopted Operating Budget. http://www.cityofpaloalto.org/civica/filebank/blobdload.asp?BlobID=23426

[3] City of San Mateo, 2010-2012 Adopted Business Plan http://www.ci.sanmateo.ca.us/DocumentView.aspx?DID=7312

parking entirely. Virtually all RPP programs include some form of temporary guest or visitor pass. Permit fees vary substantially, and of 12 cities reviewed permit prices ranged between free and $150 per year. Most cities, however, charge between $20 and $40 a year for permits. Not all cities contacted were able to speak to the cost-neutrality of their programs, but in general it appears that RPP programs are, as a rule, not revenue neutral. Even when citations are taken into consideration, most cities examined found that their permit programs required at least a small general fund subsidy.

Analysis of Parking Supply Options

Finally, the financial analysis of parking programs included an evaluation of the costs of physically supplying additional parking in the downtown. The bulk of this analysis was developed by International Parking Design and considered costs and configuration options for building a new parking structure or a parking structure plus mixed use development on existing surface lots 4, 5, and 6 in the downtown. The analysis concluded that Parking lots 4, 5, and 6 are relatively similar in size and shape and for the planning-level costing and design purposes their potential to accommodate a parking structure appears to be relatively similar. Given this, International Parking Design focused their analysis on examining as wide as possible a range of parking configurations on Lot 4. These configurations revealed that a free standing parking structure on Lot 4 could accommodate some 368-467 total spaces or 280 to 379 net new spaces once the existing 88 spaces on Lot 4 are accounted for. Total construction costs for free standing structure options ranged between $8.7 million and $11.3 million, not including soft costs. Options for combining public parking with a mixed-use retail development on Lot 4 yielded an estimated 155 to 166 new spaces or 67 to 78 net new spaces. The total construction cost for the parking component of these options ranged from $4.7 million to $5.1 million. Overall, estimated construction costs per net new space varied slightly but were roughly $30,000 for all free standing parking structure options considered. Construction costs per net new space in a mixed retail development are much higher and range from $60,000 to $76,000. Schematic floor plans for the different parking options developed for Lot 4 are included in the Task 3 Appendix. This report does not explicitly recommend building a new parking structure. In the future, however, if the City does decide to build such a parking structure accumulated revenues generated from parking pricing has the potential to substantially offset the costs of construction.

Community Input

In October and November of 2010, two different surveys were developed and administered to assess the parking habits and opinions of a variety of community stakeholder groups in and around downtown Mountain View. The first survey involved an on-line questionnaire targeted towards downtown business owners and managers, property owners, and area residents that asked respondents to answer a variety of questions about their parking habits and opinions. The second survey was an in-person “intercept” survey that was conducted in the downtown during a Thursday mid-day and Friday evening in November. This shorter survey was developed to directly capture the parking habits and opinions of a cross section of downtown visitors during what had been observed to be the downtown’s two busiest parking times. Collectively, the responses from these surveys suggest that there is a diversity of opinion about how well parking in the downtown currently works and what could be done to improve the system.

Online Survey

Residents living in the neighborhoods surrounding the downtown made up the majority of the respondents to the on-line survey with well over 200 responses. Their responses indicated that as a group, residents are only partially reliant on street parking for their own vehicles but are almost entirely dependent on street parking for their visitors. Residents' perceptions of parking availability and issues vary significantly depending on their location. In general, residents living closer to the commercial core of the downtown and in the neighborhood surrounding the Caltrain/JPB station encountered more difficulties parking and were significantly less satisfied with parking availability and current time restrictions. Resident reactions to the possibility of a residential permit parking program were mixed overall but were very positive among those living near the commercial core and in areas near the Caltrain/JPB station.

An online survey was also made available to downtown business and property owners and although the number of responses was considerably lower (31 business owners and 5 property owners) their input provided a useful reference point. More than two thirds of business owners and managers who responded to the survey lacked private parking and were dependent on public parking to accommodate the needs of themselves, their employees, and their customers. Overall, a slight majority of business owners described themselves as satisfied or very satisfied when asked about parking availability, parking enforcement, and the parking experiences of their employees and customers. Business owners reacted negatively to the idea of parking meters and ranked keeping parking free as their top parking priority for the downtown.

Intercept Survey

The downtown intercept survey yielded 248 responses and provided useful data about the parking habits of downtown visitors and employees. Downtown employees, the survey found, were more likely to park in private lots, spent less time searching for parking, and parked more quickly than the general population of downtown visitors. A majority of downtown employees said that they were satisfied or very satisfied with the availability of parking and the current system of parking restrictions. Downtown employees ranked parking for free and being able to park for extended periods of time as their top priorities.

A majority of shoppers said that they intended to stay downtown for less than 1 hour while a majority of respondents who had come downtown to eat stated that they intended to stay between 1 and 2 hours. Shoppers and diners were more likely than employees to rely on public parking. A majority of both shoppers and diners were satisfied with the availability of parking and with current parking restrictions, but were not as strongly positive as downtown employees. Being able to quickly find a space near their destination was the top parking priority for both shoppers and diners.

Parking Management Case Studies

The final component of the Downtown Mountain View Parking Study included an extensive case-study analysis of parking management practices in six other California cities. Case studies were developed for the purpose of understanding the process, elements and results of existing parking management programs. The case studies describe the political and economic environment of the planning process surrounding parking management and how cities have used parking management techniques to revitalize and strengthen their downtowns. The range of communities represented offer valuable

solutions and lessons learned particularly regarding the need for a comprehensive management approach, the value of stakeholder participation, the importance of collecting good data and monitoring programs over time.

Both Redwood City and Ventura offer examples of comprehensive parking management programs intended to promote downtown revitalization. Redwood City was the first case study examined and has long been considered a pioneer in parking pricing. Redwood City's value pricing program was developed and rolled out over 2006-2007 with the goal of promoting downtown revitalization. The case study provides detailed information about the outreach and education process as well as how the program (pricing levels) has had to be adjusted over time. The City of Ventura also adopted a parking management program as part of the larger revitalization process taking place in the downtown. Ventura's plan was developed in 2007 and implemented in 2009-2010. The case study provides detailed information about outreach and policy development and implementation including how parking behaviors have changed in response to pricing.

The City of San Mateo and the City of Burlingame both offer local examples of parking pricing programs in active downtowns. The City of San Mateo has been managing parking in their downtown for many years and has recently made a variety of policy and program changes in order to improve access and turnover within their current facilities. This has included differential pricing and time limits for off-street facilities and the exploration of a parking based business improvement district. The City of Burlingame has an established system of differential pricing to encourage turnover at their high value on street meters, shifting price sensitive long term parkers to cheaper satellite off-street lots. This program was supplemented with a parking wayfinding system.

The City of Palo Alto chose to manage its parking with a unique color coded zone approach and avoids direct parking pricing. Visitors can park for up to 2 hours in any one color zone for free. Visitor and long term permits are also sold for these areas. The city has noted that this method required significant enforcement resources. Businesses are part of an assessment district which helps cover the cost.

Finally, both the City of San Jose's Residential Permit Parking (RPP) program and Parking Guidance Systems (PGS) were evaluated for this case study as example of specific parking programs of interest. In 2000, there were parking issues in the downtown area due to revitalization, redevelopment and San Jose State University enrollment. To improve the parking supply/demand balance in Downtown, the city adopted residential parking permit zones in several areas. The PGS was rolled out in 2004 to assist in wayfinding to existing off-street parking facilities.

Unbundling

At the request of the City, "unbundling" of parking was also reviewed as a parking management strategy. Residential and commercial parking requirements are often perceived as tying developers' hands from building to the true market demand for parking by requiring parking supply that the market may not actually desire. Unbundling the cost of parking spaces from leasable units is a mechanism that helps to gauge market demand and control the costs of commercial and residential development. It is also a management tool that provides greater transparency about the true costs of parking, so residents (and employees) can make fully informed choices.

Recommendations

As the preceding report summary indicates, the Downtown Mountain View Parking Study is a wide ranging analysis that touches on many different aspects of the downtown parking system. Ultimately, the focus of this study has been to provide a detailed snapshot of how parking currently functions in the downtown, to provide, insight into how parking needs will change in the future, and to discuss the landscape of policy and program options the City can pursue to ensure that parking continues to support the growth and success of the downtown. The following recommendations are targeted towards helping the City develop a comprehensive parking management strategy for the downtown that aligns goals, policies, and specific programs. Developing a comprehensive strategy, rather than an ad-hoc constellation of programs and fixes, will help Mountain View systematically and thoughtfully respond to both the issues identified in this report and to future challenges that are as yet unknown.

The recommendations resulting from the Downtown Mountain View Parking Study are organized into three groups. The first two groups relate to parking policy and administrative procedures and should be viewed as short-term recommendations that are in many ways "prerequisites" for any significant shifts in the City's approach to parking management. The three groups of recommendations are:

1. **Recommended Parking Objectives and Policies:** A consistent and cohesive system of parking goals and policies is the essential first step in developing a strategic parking management framework. This report's recommendations start with the objectives outlined in the Parking Standards and Policies section of the 2004 Downtown Precise Plan as a baseline and then suggests several additions to increase their applicability to the public parking system in particular.
2. **Recommended Administrative Approaches**: The success of any parking management program is dependent on its administration. This report recommends reviewing and implementing several enforcement and administrative procedures prior to undertaking any new, significant parking management programs.
3. **Recommended Parking Management Strategy and Programs**: Finally, the report recommends a strategic approach to identifying, evaluating, and implementing parking management strategies in the downtown. This strategy categorizes potential parking management programs into a hierarchical framework and provides a step by step methodology for discerning what tools should be used to tackle a particular problem. The recommendations show where Mountain View's existing parking management programs fit into the proposed framework and make short and long range recommendations regarding how existing programs could be modified or what new ones may be appropriate to consider.

Recommended Parking Objectives

The first step in developing a comprehensive parking management program is to establish a series of goals and objectives for parking in the downtown. Most of the specific discussion regarding parking in the 2004 Downtown Precise Plan addresses off-street parking requirements for private development (as opposed to public parking management). The plan does, however, include objectives statements that broadly relate to downtown parking and access as a whole. These are shown in Table R.1 below.

Table R.1: 2004 Downtown Precise Plan Parking Objectives

Parking Standards and Policies
A) Facilitate the development of a convenient and accessible downtown by ensuring that adequate parking is provided.
B) Provide incentives and shared parking facilities for the creation of a busy and active Castro Street, particularly between Mercy Street and Evelyn Avenue
C) Encourage the use of transit, bicycles, shuttles and other alternatives to the automobile to reduce the demand for downtown parking facilities.
D) Encourage public/private partnerships aimed at increasing the supply of parking where it is shown to be needed.
E) Provide adequate and well-located parking within the Downtown Precise Plan area to allow for future growth.
F) Monitor parking supply and demand, taking into consideration use of alternate modes of transportation

In addition to these parking objectives, the Downtown Precise Plan also contains a separate land use policy to "Preserve and enhance existing residential neighborhoods in and near downtown" with the sub-policy to "Prevent commercial overflow parking from encroaching into residential neighborhoods."

Collectively, these parking objectives form a partial basis for developing a parking management strategy. They identify the importance of developing and managing parking in a way that supports current downtown activities, promotes future growth, and encourages the use of transit and alternative modes. The statements generally do not, however, provide any guidance as to how public parking resources should be prioritized when different users and activities are in competition. Similarly, although objective (d) touches on the importance of encouraging public-private partnerships in the development of new parking supply, the objectives do not offer any broad guidance regarding how parking activities should be financed or if and to what extent the City should subsidize public parking.

Consideration of these issues is essential when developing a comprehensive parking management strategy. For the purposes of this analysis, the following additional parking objectives are suggested (with accompanying discussion).

Table R.2: Recommended Additional Parking Objectives

Recommended Objective	**Manage parking in a way that makes customers the priority parking group in the commercial areas of the downtown**
Discussion	Public parking in downtown Mountain View is a limited resource in high demand. The deficit between available parking supply and demand currently observed at some facilities during peak hours is expected to expand even further in future years. When parking is in high demand it may not be possible for all drivers to park as close to their destination as they would like or for as long as they would like. In these situations, parking should be managed to give first priority to customers. Customers are the economic lifeblood of the downtown and of all the different parking "users" in the downtown they are the most sensitive to parking inconveniences. Customers may be less familiar with the array of downtown parking options and will be most concerned with finding available parking near their destination quickly and easily. Downtown employees and other user groups staying for long periods of time will typically have a greater familiarity with the overall downtown parking system and will generally be more willing to park remotely and may have a greater ability to shift to an alternative mode of travel. Adopting an objective statement that explicitly prioritizes the parking needs of downtown customers and visitors (over those of downtown employees, commuters, or other long-term parkers) provides clear guidance about how parking management programs and tools should be structured and used.
Recommended Objective	**Manage parking in a way that makes residents the priority parking group in the residential neighborhoods surrounding the downtown**
Discussion	This parking objective echoes the land use policy already spelled out in the Downtown Precise Plan. Downtown Mountain View is surrounded by established residential neighborhoods and many of these neighborhoods already experience parking impacts related to the downtown and the nearby Caltrain/JPB station. As parking demand in the downtown increases, ensuring that residential neighborhoods are protected from spillover parking impacts should be an ongoing parking objective. It is important to note that on-street parking, regardless of whether it is in front of a retail store or a single family home, is public property and is available for use by all drivers. That said, Mountain View residents have a reasonable expectation that their neighborhoods not become de-facto reservoirs of parking for Caltrain commuters or downtown employees. Residential areas should be protected from unwarranted parking impacts while still assuring that the parking in those neighborhoods is available for use in an efficient and equitable manner by a range of users.
Recommended Objective	**Recognize that public parking in the downtown is an economic asset that has both an inherent value and a cost to supply and maintain. Manage parking as an "asset" and at a minimum strive to achieve cost recovery for any and all downtown parking supply, maintenance, and management activities that are above the baseline level of service that would be provided elsewhere in the City.**
Discussion	Providing, maintaining, and managing parking requires substantial capital and operating expenditures that in Mountain View are generally not recovered from the drivers who actually use and benefit from the spaces. The land and right-of-way occupied by the City's off-street lots and on-street parking is a scarce resource. Allocating existing street space to parking, as opposed to pedestrian, bicycle, or bus-only facilities or the kind of outdoor space and streetscape improvements seen along Castro Street involves a substantial opportunity cost. Similarly, the downtown land currently used for parking lots has a real economic value and could be dedicated towards any number of other purposes. An asset management perspective examines the relationship between the cost of providing a service and the price charged for using it. This principle has been applied in transportation finance, where a user-pay approach has been adopted. Gasoline taxes, vehicle registration fees, road pricing, and transit fares establish the link between user benefit received and payment. When considering new parking management programs, evaluate the cost of providing parking as part of the analysis. Moving towards an asset management perspective does not mean that the City should immediately begin charging users the full cost of parking. However moving towards a system that considers the various revenue and funding streams generated by parking and balances those against the costs of maintaining and supplying parking in the future will ultimately yield a parking system that is more financially sustainable and that begins to link the costs of providing a service with those receiving the benefits.

Recommended Administrative Procedures

Managing parking is a difficult task that involves the cooperation of many different City departments. The following administrative recommendations will help ensure that parking management programs function as intended in the City of Mountain View. All of the following recommendations are considered "short term" (12-24 months) and, if the City agrees with them, should be implemented prior to undertaking any major new parking management programs or changes.

Table R.3: Recommended Administrative Procedures

Administrative Recommendation	**Review downtown parking enforcement procedures and consider adjustments as needed**
Discussion	Sufficient and consistent enforcement of all parking policies and restrictions is an essential prerequisite for any parking program. A detailed review of parking enforcement practices lies outside the scope of this project, but data collected during the existing conditions analysis and through discussions with City staff indicate that current enforcement practices are relatively limited. Establishing an adequate baseline of parking enforcement is important for two reasons. First, if parking is not consistently enforced the effectiveness of any new or existing regulations will be undermined and it will be difficult to determine with any degree of certainty whether they are functioning as intended. Undertaking major new parking management initiatives is inadvisable if the functioning of current programs cannot be fairly evaluated. Second, parking enforcement has significant financial implications for the City. Enforcement activities are costly but also generate large sums of revenue through citations. This report does not recommend using parking enforcement specifically as a revenue generating tool, but both the costs and revenues associated with changing parking enforcement practices are substantial and must be considered and tracked as a component of any new parking program.
Administrative Recommendation	**Designate an inter-departmental working group to monitor downtown parking issues and implement solutions**
Discussion	As noted earlier, parking is an inter-departmental issue. Community Development, Public Works, Police, and Finance all have specific responsibilities and areas of expertise when it comes to managing parking. For a comprehensive parking management program to be successfully implemented it will be critical to involve key stakeholders from all of these departments on an ongoing basis. Designating an inter-departmental team to meet regularly and review, monitor, and discuss parking issues in the downtown will insure that all departments are equally aware of current parking challenges and will help institutionalize a program of active parking management and review. This working group can also have an active role in ensuring that the costs and revenues associated with parking in the downtown are consistently and accurately tracked (see below). Finally, the working group will also be in a position to move in a rapid and informed way if and when the City decides to move forward with the implementation of any major parking programs or if an unexpected parking challenge emerges.
Administrative Recommendation	**Consistently track all revenues and expenditures related to parking in the downtown on an annual basis**
Discussion	In order to effectively manage parking and make good strategic decisions it is critical that the City have a firm understanding of all of the revenues and expenditures related to parking in the downtown. The financial analysis contained in this report represents a baseline starting point for such an accounting but also required that a number of assumptions and estimates be made where the City was not able to fully disaggregate costs. If the City makes the ongoing commitment to track costs related to parking it will yield a rich, accurate accounting of data that a can be used to monitor existing programs and better project the financial implications of future changes.
Administrative Recommendation	**Evaluate approaches to PMAD and consult legal counsel on preferred option**
Discussion	This report contains analysis suggesting a number of different ways in which the existing PMAD could be modified, expanded, or otherwise added to. After reviewing this information the City should decide whether any of the options presented merit further pursuit at this time. At that point the City should engage legal counsel for further, detailed advice.

Recommended Parking Management Strategy and Programs

The term "parking management" is used to collectively refer to the system of policies, regulations, and practices that control the use and supply of on- and off-street public parking. Downtown Mountain View's current set of time restrictions and employee permit parking system are both classic examples of active parking management programs. Similarly, any future implementation of residential permit parking or metering would also constitute parking management programs. In addition to programs that directly restrict or control the use of public parking, parking management also extends to programs that attempt to reduce parking demand or expand the public parking supply. Thus transportation demand management programs intended to discourage driving or encourage the use of transit or bicycles could be broadly categorized as parking management strategies as could an initiative to build a new public parking structure. Although parking management does not directly include the City's system of parking requirements controlling how much private parking a developer must provide, parking requirement reductions and in-lieu fees such as those in evidence in downtown Mountain View make having a well developed parking management program even more important.

Developing a Parking Management Strategy

It is important to think of parking management in a comprehensive sense rather than as a collection of individual programs. As many of the case studies discussed in this report demonstrate, individual parking management tools and programs are most effective when they are used in conjunction with one another in the service of larger objectives.

As the City of Mountain View explores new parking management tools, it is important that this discussion happen within a larger strategic framework. Any changes to the parking management system or new parking management approaches should be evaluated to ensure that they complement existing practices and support identified overall objectives for parking in the downtown. A successful parking management program will include a wide variety of tools and programs and must also be flexible enough to adapt to changing parking conditions and challenges over time. Most importantly, a parking management strategy must coordinate and balance the access needs of many different users in a way that supports the City and community's larger goals for the downtown.

The previous tasks in this report have identified a number of current and future parking issues in the downtown that could potentially jeopardize or conflict with the parking objectives recommended earlier. Nearly all of these, whether current or future, boil down to parking that is too "full" in certain locations at certain times of the day. From a parking management perspective, parking that is "full" (or over the practical capacity level of 85%) is problematic for a number of reasons. First, it can lead to excess traffic as drivers circle from block to block looking for an open space. Second, once a parking facility is full it means it can no longer be effectively managed to prioritize access to particular users. A resident who wants to park in front of their house, or a customer who needs to drop off dry-cleaning will reasonably experience frustration if they are unable to find parking relatively close to their destination. Keeping on- and off-street parking at occupancy levels below practical capacity is thus a critical role for any parking management program. Ideally, occupancy levels should be maintained at 85% on-street and 85-90% off street.

The following parking management strategy provides a simple conceptual continuum that can be used to select specific parking management tools within a larger parking management framework. Within an active parking management system, occupancy levels are monitored and when they reach 85% (or potentially 90% in the case of off-street parking), parking management programs and tools are applied

or tightened to bring them back down to the optimal level. The continuum shown in Table R.4 is predicated on the philosophy that parking management should be as unobtrusive as possible and should only grow more restrictive (and more complex and costly) when necessary to maintain optimal occupancy levels. Each group of "tools" is discussed in more detail subsequently.

Table R.4: Parking Management Continuum

	"Parking Tool Group"	Discussion
Less Intense → → → → More Intense	Manage Parking Demand	When a parking issue is identified, first attempt to address the problem by decreasing the demand for parking. Identify programs and strategies to switch users to alternative modes, or work with specific developments and businesses to implement transportation demand management programs as appropriate.
	Manage Parking Location	If demand reduction strategies are not an adequate or appropriate way to address the parking challenge, try to manage parking location. Look for areas where parking is vacant or underutilized and try to shift parking from high demand areas. Shared parking agreements and the designation of satellite parking lots represent basic parking location approaches.
	Limit Parking Time	When shifting parking location is not sufficient, time limits can be implemented to encourage turnover and more efficient use of parking spaces. Time limiting strategies may also include a critical look at residential parking permits, loading zones or passenger loading zones.
	Price Parking	Pricing strategies are some of the most flexible and effective parking management approaches to shifting parking demand. Pricing strategies include the direct pricing (metering) of parking but can also include mechanisms such as employee permits, parking cash-out and unbundling programs, and even parking in-lieu fees. All pricing programs monetize parking in some way and thus cause users to consider more carefully how and to what degree they use parking.
	Expand Parking Supply	Supply strategies involve creating or adding parking spaces into an area. Building new parking is the most costly management solution and encourages driving at the expense of alternative modes. It is recommended only if other parking management strategies have been tried and exhausted. It is easier to build parking structures or underground parking in areas with a high parking value (parking pricing or substantial revenue/income streams) to get a reasonable return on investment.

Based on the above discussion, the following general parking management recommendations are made prior to discussing individual program recommendations.

Table R.5: General Parking Management Recommendations

Parking Management Recommendation	**Commit to a comprehensive parking management program**
Discussion	Committing to a comprehensive parking management program means that all future parking changes and activities in the downtown should be evaluated to make sure they are internally consistent and will support the parking objectives identified earlier
Parking Management Recommendation	**Establish an 85% on-street occupancy level and a 90% off-street occupancy level as a baseline trigger for parking management interventions**
Discussion	85% occupancy levels on-street and 90% occupancy levels off-street are generally accepted "practical capacity" levels for parking facilities. When parking is at or above these levels driver frustration and excessive traffic are likely to result. Establishing percentage occupancy levels as "triggers" for parking interventions does not necessarily mean that a management intervention must occur when such a level is reached but it provides a useful policy ruler as to when it is appropriate for the City to consider parking management adjustments.
Parking Management Recommendation	**Approach parking challenges using the demand to supply continuum of management tools**
Discussion	The continuum of parking management tools presented in Table R.5 is designed to address parking problems in a way that promotes the use of alternative modes, is as minimally restrictive as possible, and discourages directing City resources towards the financing of costly new parking without exhausting other options first.

Finally, specific recommendations regarding parking programs to adopt and investigate are presented, by group, on the following pages.

Manage Parking Demand

Demand management tools include programs that are used to manage the demand for parking and should be considered a first step before undertaking additional parking management measures. They include a broad portfolio of transportation demand management strategies such as expanded bicycle facilities, preferential carpool and vanpool parking, car-sharing, transit subsidies, and the encouragement of flexible work schedules. Implementation mechanisms for these programs will differ depending on circumstances, but some could potentially be implemented through development agreements at particular sites, or on an area-wide basis using money derived from parking revenues. In many cases, such programs may be difficult to implement on a downtown-wide basis, but could provide a targeted mechanism for reducing parking demand in particular locations or at particular times of day.

Table R.6: Demand Management Recommendations

Parking Management Recommendation	**Manage Parking Demand**
Examples of Existing Programs	Mountain View's Downtown Precise plan already provides developers with a parking requirement credit for implementing TDM policies and is thus a good example of a demand management program put into action. Similarly, the proposed bicycle sharing program in the downtown could also be considered a demand management strategy that has the potential to reduce the overall demand for parking within the downtown by shifting visitors to alternative modes. Downtown Mountain View also has excellent pedestrian infrastructure that encourages walking and connects pedestrians to the downtown's many transit amenities.
Short Range Recommendations	• Continue support for programs in the downtown area that promote the use of alternative modes • Ensure that all TDM programs for which developments have received parking requirement reductions have been fully implemented and are regularly monitored
Long Range Recommendations	• Consider developing a policy that would link any excess downtown parking revenues to the funding of other downtown transportation improvements. Develop a list of transportation demand management programs and alternative mode improvements that could potentially be funded should future parking revenues materialize.

Manage Parking Locations

If parking demand cannot be reduced to the desired levels through demand management approaches alone, then it is appropriate to consider management solutions aimed at shifting the spatial location of parking demand from impacted areas to parts of the downtown that have available capacity. Wayfinding and signage programs can be used to direct users into more remote off-street parking lots or alert them to the presence of parking facilities that might not be familiar to them. Dynamic signage programs that use electronic displays to show the number of remaining spaces available within parking facilities are especially effective. Shared parking agreements are another form of location tool since they allow users to park in existing spaces that were previously inaccessible to them, thus shifting their parking location to an underutilized resource. Much of the commercial parking in downtown already relies on the shared public lots and parking structures. There are a number of large private parking facilities such as the St. Joseph's Church lot and Wells Fargo lot, however, where there may be opportunities to negotiate shared parking arrangements.

Table R.7: Location Management Recommendations

Parking Management Recommendation	**Manage Parking Location**
Examples of Existing Programs	Mountain View is in the process of developing and implementing a downtown signage program that will help drivers locate parking quickly and conveniently.
Short Range Recommendations	• Consider eliminating or restricting the use of employee permits in Lots 6 and 7 and allowing employee permits on all floors of the parking garage at California Ave and Bryant Street. • Work with VTA to develop and implement strategies that promote commuter usage of the VTA-owned Pioneer Ave parking facility
Long Range Recommendations	• Consider installing electronic signage on parking garages that dynamically show the number of available spaces. Such signs can reduce excess circling by advertising parking availability and can prevent drivers from pulling into a garage that is already full. • Explore targeted shared parking opportunities with existing private parking owners such as St. Joseph's Church, Wells Fargo, and Kaiser Permanente. Shared parking opportunities at these facilities may not include every day usage but could provide needed capacity during special events, particularly those occurring in the evening.

Manage Parking Time

Time management tools limit the amount of time some or all users can remain parked in certain areas. Such tools can promote turnover in high demand areas and will work to shift users with longer term parking needs (such as employees and commuters) to locations that have less restrictive limits. Time management tools include posted limits, such as Mountain View's current system of time restrictions, are intended to promote turnover of spaces and exclude longer term parkers from parking in certain areas. As evidenced in downtown Mountain View, however, time limits can also push long term parkers into residential areas and can lead to shuffling or re-parking of vehicles from place to place. Residential permit parking, discussed extensively in Part Two of this report, is another example of a time management tool that can play a critical role in limiting various kinds of parking spillover by restricting time for some users while granting unlimited parking to others. As noted earlier and in Part Two, however, an effective residential parking program requires the commitment of substantial City resources.

Adjusting the specific hours and days of the week that parking management tools apply and are enforced can be a tool in and of itself for changing parking behaviors and addressing parking demand generated by particular uses. Traditionally parking management hours have been aligned with standard business hours and this is currently the case in Downtown Mountain View with posted time restrictions active roughly from 8:00am to 5:00pm on weekdays with some variation. As a general rule, however, parking management tools should be active during the same times that there is likely to be heavy parking demand or a parking supply shortage. The capacity problems downtown Mountain View experiences on Friday evenings, for example, suggest that it may be appropriate to extend parking management hours into the evening. While appropriate extension of management controls will help the parking system function more smoothly they may also be controversial and unpopular among users who expect parking to be unrestricted during evening hours or on weekends. Particular care should also be taken when extending management hours in or near residential areas to ensure that residents have access to street parking if necessary. The advantages to tailoring management hours should also be weighed against the logistical problems of providing enforcement at different times and the potential for public confusion due to multiple sets of rules. Community education and outreach for any significant management change is advised.

Table R.8: Time Management Recommendations

Parking Management Recommendation	**Manage Parking Time**
Examples of Existing Programs	Downtown Mountain View's current system of off- and on-street time limits is the major system of parking regulation in the downtown.
Short Range Recommendations	• Confirm that enforcement practices and posted time limits are in alignment. Pay particular attention to the range of times and days specified on parking signage and adjust signage or enforcement practices as appropriate. • Re-evaluate loading zones using the analysis in this report. Ensure that all loading zones, including those located in Wild Cherry Lane, are clearly marked and signed with respect to their boundaries and the hours they are in effect.
Long Range Recommendations	• Consider developing a pilot residential permit program in the residential neighborhood near the Caltrain/JPB station. • Investigate the extension of parking time limits into evening hours as a means to reduce high occupancy levels at certain facilities.

Manage Parking Price

When time management demand, location, and time strategies alone are not sufficient, there are wide ranges of parking pricing tools that can be considered. Pricing encompasses an extremely versatile and powerful set of management tools that can be used many different ways depending on the environment and desired outcomes. People will consistently choose free parking over other alternatives and charging for parking is one of the most direct routes to instigate a shift in parking behavior across all user types. Instituting or raising on-street prices encourages parkers to evaluate the full range of parking and access options available to them rather than defaulting to searching for whatever parking is close to their destination. In many cases, parking prices are paid by the user when they park (at a meter, for example). In other instances, parking may be paid in advance as an ongoing fee such as the system of employee parking permits currently available to businesses located in the Parking Maintenance Assessment District. The "unbundling" of parking from a lease is another form of pricing that is discussed extensively in the Part Two analysis. Similarly, various implementations of on-street pricing are discussed in the case studies included in Part Two (e.g., variable pricing by on-street location, differential pricing on and off street, pricing by length of stay, etc.) All are examples of the variety of ways in which parking pricing programs can be implemented.

Table R.9 Pricing Management Recommendations

Parking Management Recommendation	**Manage Parking Price**
Examples of Existing Programs	The City's current system of employee parking permits is one example of parking pricing. Similarly, the parking in-lieu payments developers within the parking are another way in which parking in downtown Mountain View is priced.
Short Range Recommendations	• Explore the possibility of selling parking permits to downtown employees outside of the PMAD (at a higher price). Consider limiting the location where these permits can be used to the top floors of the parking structure located at Bryant and California Avenues. Cap initial sales of these permits at 100 and then monitor usage and adjust upwards if appropriate.
Long Range Recommendations	• Consider pricing on- and off-street parking in the downtown as both a parking management strategy and as a mechanism for funding parking maintenance and other transportation improvements. • Consider allowing the unbundling of parking from residential leases. Only entertain unbundling in situations where its implementation would not incentivize the shifting of parking demand on-street or into public parking lots. For example, unbundling should not be allowed in conjunction with a residential permit program.

Manage the Parking Supply

Finally, if there is a remaining parking shortage after the above management approaches have been attempted or considered, it may be necessary to increase parking supply. Task 3.4 discusses the options and costs for increasing the public parking supply in Downtown Mountain View and the high dollar figures indicate one of the primary reasons why building new parking should be the last resort of a comprehensive parking management strategy. Expanding the parking supply through the construction of new facilities is costly, has the potential to increase auto trips, and can have significant aesthetic impacts on the surrounding area. Given this, supply expansions should only be undertaken when it is clear that management solutions alone cannot adequately address a parking problem.

Table R.10: Supply Recommendations

Parking Management Recommendation	**Manage the Parking Supply**
Examples of Existing Programs	Downtown Mountain View has a large supply of off-street parking that is owned and maintained by the City.
Short Range Recommendations	• Evaluate the annual replacement reserve set aside in the PMAD budget for major future capital expenditures and ensure that it is sufficient to cover future maintenance needs. • Use the estimates of parking construction costs provided in this report to inform analysis of the economic conditions under which public private partnerships for the construction of new parking may be feasible.
Long Range Recommendations	• Continue to support the Downtown Precise Plan's parking objective of encouraging public / private partnerships for the development of new parking supplies

Downtown Mountain View Parking Study

Part 2:

Supporting Analysis

DRAFT

Task 1 Report: Executive Summary

The following document is a full reporting of the analysis conducted during Task 1 of the Downtown Mountain View Parking Study. Task 1 included a review of previous parking studies, an inventory of the public parking supply in and around the downtown, and an extensive documentation and analysis of current parking usage trends. This work provides the foundation of data that will be used in future study tasks directed towards projecting future parking demand and understanding the financial implications of any changes to the City's current parking management strategies. The following is a very brief, bulleted summary of key findings included in the report:

1.1 Previous Parking Studies

- Major comprehensive parking studies were conducted in Downtown Mountain View in 1993 and 1999. More recent, development oriented studies have been conducted in 2009 and 2010
- Studies consistently showed a pattern of parking utilization with high parking occupancy levels observed weekdays during the midday and on Friday evenings.

1.2 Existing Parking Supply and Regulations

- The defined study area includes 5,669 public parking spaces, 3,558 of which are on-street spaces and 2,111 of which are located in public off-street facilities
- The report includes a detailed inventory of parking by type and restriction category. An inventory of loading zones and bicycle parking facilities is also included.

1.3 Parking Utilization

- Parking in the commercial core of downtown
    - Parking occupancies in the downtown core peaked during the midday on Thursday at an overall occupancy rate of 77% and on Friday evening at an overall occupancy rate of 85%. Parking occupancies in off-street lots were as high or higher than on-street parking occupancies for much of the day.
    - Occupancies at many public off-street lots were observed to be extremely high during both the midday and evening peaks, often reaching 100% of capacity. Other facilities, most notably the new parking structure at California and Bryant Streets (Lot 3), had ample capacity available at all times.
    - Parking occupancies on Saturdays were generally lower than those observed on weekdays but many of the lots and streets abutting Castro Street were still heavily occupied for much of the day
    - The majority of all "parking events" are one hour or less (a "parking event" refers to each occurrence where a single vehicle was observed to occupy a single parking spot for a certain length of time). The average parking event length, however, is over two hours since there are also a substantial number of long term and all day parkers in the downtown.
    - Time limit violations during enforcement hours are common, particularly on-street.
    - 884 spaces in the downtown are eligible for employee permit parking and 627 valid permits are currently in circulation. Parkers with employee permits park for significantly longer than vehicles without permits but account for a relatively small proportion of downtown parkers

  - A significant amount of parking was observed to occur in the downtown's alleys. Because loading zone and parking designations are not clearly marked in the alleys it is not possible to calculate occupancies. The overall number of cars parked in each alley at different times of the day was found to roughly conform to the general trends observed in the downtown as a whole.
  - A conservatively estimated 500-600 vehicles were observed to repark once or repeatedly each day during enforcement hours. Many of these reparking vehicles are likely downtown employees or long term visitors moving their cars to avoid time restrictions.
- Parking in the residential periphery surrounding the downtown
  - It is difficult to draw generalized conclusions about parking utilization in the periphery
  - Overall parking in the residential periphery surrounding downtown is not highly occupied and there is little evidence of widespread spillover from commercial activities downtown.
  - The residential neighborhood near the Caltrain/JPB Station appears to be impacted by spillover from the Caltrain/JPB lot. The neighborhood as a whole has sufficient parking capacity to accommodate the total number of cars observed in the area, but some individual blockfaces are severely impacted for much of the day while others have many vacant spaces.
  - The residential neighborhood around Hope Street between El Camino Real and Mercy Street appears to experience modest spillover from adjacent commercial uses on Castro Street.
  - Both of the Library parking lots experience high occupancy levels and the adjacent on-street parking along Franklin Street appears to be modestly impacted by Library patrons.

1.1 Previous Parking Studies

A variety of parking studies have been conducted in Downtown Mountain View over the past two decades including both comprehensive parking studies and parking analyses related to specific downtown developments. The data and findings in these studies provide an important point of reference when considering current parking usage in the downtown. The following report section briefly summarizes the findings of these studies with respect to the area covered and the parking utilization trends observed. The geographic area covered by each of the parking studies discussed is shown, relative to the current study area, in Figure 1.1.1. It should be noted that the 1999 Comprehensive Parking Strategies Report has several sections that will be referred to in subsequent sections of this report as they pertain to more specific analyses. This section will refer specifically to the parking utilization findings.

Historical Parking Studies

The City of Mountain View conducted two major parking studies in 1992/93 and 1999. Supplemental downtown parking utilization data was also collected by the City in 1996, between these two studies.

Both the 1992/93 and 1999 comprehensive parking studies included midday and evening parking occupancy counts. According to the 1999 study report, June was believed to be a higher-than-average period because the weather was thought to attract lunchtime diners and strollers, but it was also thought to be before the peak vacation period. Analysis of sales tax data in the 1999 report revealed that seasonal peaks in commercial activity did not appear to be especially pronounced during the year. The 1999 Study report summarized the following key findings related to current and historical patterns of parking usage in the downtown:

- Parking occupancy rates increased significantly from 1992 to 1996. Midday peak occupancy rates in the Parking District facilities jumped from 85% in 1992 to 97% in 1996 and 93% in 1999.[4]
- Friday evening parking occupancy rates increased from 77% to 89% in the Parking District facilities between 1992 and 1999.
- Weekday midday and Friday evening occupancy rates in the Parking District facilities were over the 85% occupancy rate recommended as “practical capacity”.
- The increase in occupancy rates was believed due primarily to the upgrading of downtown restaurants and shops and to increased employment within several miles of downtown. Changes in commercial floor area and building vacancy rates had been limited during this period. Building vacancy rates were near historic lows in 1999.

[4] *The apparent drop in occupancy between 1996 and 1999 may be due to the increased supply, including about 100 additional on-street parking spaces and about 50 spaces in a new temporary lot. Occupancy rates may also have been temporarily lowered by construction on Evelyn Avenue.*

Legend

Study Areas

- 2010 Mountain View Downtown Parking Study
- 2009 Downtown Mountain View Affordable Family Rental Housing Parking Study
- 2009 W. Evelyn Avenue TIA
- 1999 Downtown Mountain View Parking Strategies
- 1992-1993 Comprehensive Parking Study
- 2010 Minton's Development Study (455 West Evelyn Avenue)
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 1.1.1 Historical Comparison of Parking Study Areas

Recent Parking Studies

Downtown Mountain View Affordable Family Rental Housing Development Parking Study (2009)

In 2009, Wilbur Smith Associates (WSA) conducted the Downtown Mountain View Affordable Family Rental Housing Development Parking Study. The study examined the parking needs and impacts of a proposed affordable rental housing development at the City owned Evelyn Avenue property at West Evelyn Avenue and Franklin Street (a property known as Lot 10 and used on a temporary basis as overflow parking for Caltrain commuters and public parking for the downtown).

The study was divided into two phases. Phase 1 was a comparative analysis of 3 affordable housing rental developments in the Bay Area for the purpose of estimating parking demand and appropriate parking requirements. Phase 2 examined the availability and utilization of other parking facilities in Downtown Mountain View in order to determine the potential impact of the displacement of Lot 10 and its associated parkers. Findings related to parking utilization in the downtown as a whole from this study included:

- The peak hour of demand occurred on Friday night from 8:00 p.m. to 9:00 p.m. at which point parking in the downtown was 84% occupied.
- A smaller, midday peak in demand was observed on Thursday when parking in the downtown was observed to be 76% full.
- Overall on and off-street occupancy rates were observed to be similar, but demand was not evenly distributed among individual blocks and lots.

100-200 W. Evelyn Avenue Transportation Impact Analysis

The 100-200 West Evelyn Avenue TIA was completed in early 2010 by Fehr & Peers Associates for a proposed three-story office building with an underground parking garage on West Evelyn Avenue. As part of the study, a parking analysis was conducted in June 2009 to review the parking supply and demand for the existing and future office buildings. The survey locations included the project site parking lot, adjacent Caltrain/JPB lot on Evelyn Avenue, VTA Park & Ride lot on Evelyn, and on-street parking in the area bounded by Calderon Avenue, Dana Street, Castro Street, and Evelyn Avenue. The study counted 1,285 stalls for the existing parking supply in this area, 523 of which were on-street parking spaces. Additionally, the study noted on-street time restrictions and conducted hourly parking occupancy counts. The parking occupancy counts took place between the hours of 10:00 a.m. and 2:00 p.m. on a typical weekday. The following key findings from the 100-200 W. Evelyn TIA relate to more general parking utilization patterns in the current study area:

- The Caltrain/JPB lot consistently displays the highest occupancy of all survey locations with a peak of 98 percent at 12:00 p.m..
- On-street parking occupancy ranged from a low of approximately 48 percent to a high of 66 percent, at 12:00 p.m..
- The study noted that on-street spaces with 1-hour or 2-hour time limits were observed to have higher occupancy rates than the spaces restricted to 5-hour or unrestricted. Most of the occupancy levels peaked at 12:00 p.m., with the exception of the spaces under the 5-hour limit, which peaked at 1:00 p.m..

455 W. Evelyn Avenue Traffic Impact Analysis (Minton's Residential Development)

The 455 West Evelyn Avenue TIA was completed in early 2010 by AECOM Transportation for a proposed residential development at the site of the current site of Minton's Lumber & Supply. As part of the analysis, a study of on-street parking in the area surrounding the proposed development was undertaken on a Wednesday and Saturday from 6:00 a.m. to 9:00 p.m.. The area surveyed roughly included the on-street blockfaces bordered by Calderon Avenue, W. Evelyn Avenue, Hope Street and West Dana Street. The study focused on recording the observed occupancies for each street segment and on tracking the number of vehicles parking for less than 5 hours, more than 5 hours, and more than 8 hours. The following key findings from the 455 W. Evelyn Avenue analysis relate to the current study:

- Peak on-street occupancy in the study area was 71% and occurred at 1:00 p.m. on Wednesday. Although the study area as a whole had sufficient parking at all times, a number of individual blockfaces were observed to be completely full at different points during the day.
- Peak Saturday occupancy occurred at 8:00 p.m. but reached only 49%. No blockfaces were ever observed to be completely full on Saturday.
- On Wednesday, 42% of cars were observed to park for 5 or more hours, suggesting that they likely belonged to residents or commuters. Only 34% of cars on Saturday were observed to park for 5 hours or longer
- On streets where parking was restricted to 5 hours, 27% of cars still parked for 5 or more hours indicating a high violation rate.

Historical Peak-Hour Occupancy Level Comparison

As previously described, occupancy counts for the commercial core of the downtown were conducted in 1992, 1999, and 2009. In 1992, parking occupancy surveys were conducted over two weekdays and two Friday evenings. Overall parking occupancy levels were highest during Friday at lunchtime, with 66% of private and public parking in use in the Parking District lots, on-street, and in larger private/restricted facilities. In 1999, parking occupancy surveys were conducted over Thursday midday and Friday evening. Parking District facility occupancy rates increased 8% from 1992 during midday peak and 12% from 1992 during Friday evenings. In 2009, parking occupancy surveys were conducted over a Thursday midday and Friday evening. The 2009 parking study observed parking in the downtown to be 76% full during midday peak and 84% full during Friday evening from 8:00 p.m. to 9:00 p.m., at which point parking was at the peak hour of demand in Downtown. Table 1.1.1 summarizes the findings of each study related to peak hour occupancies at downtown public facilities.

Table 1.1.1: Peak Occupancy Comparisons (Public Facilities)

Parking Study	Weekday Midday Peak Occupancy	Friday Evening Peak Occupancy
1992-1993 Comprehensive Parking Study	85%	77%
1999 Downtown Mountain View Parking Strategies	93%	89%
2009 Downtown Mountain View Affordable Family Rental Housing Development Parking Study*	76%	84%

**Downtown study area included lots outside of the Parking District.*

As Table 1.1.1 suggests, parking activity in the downtown has consistently shown a double "peak," with the highest occupancies observed during the midday lunch hour and on Friday evenings. The historical data also suggests that the prominence of the Friday evening peak relative to the midday peak appears to have switched between 1999 and 2009, with the highest observed parking occupancies downtown now occurring on Friday evenings. This trend is borne out in the current study's utilization data.

1.2 Existing Parking Supply and Regulations

The following report section documents the existing parking supply in and around Downtown Mountain View. This parking inventory includes a detailed description of all City-owned off-street public parking and all on-street parking within the designated study area. The description of the existing parking supply also includes an inventory of all designated passenger and commercial loading zones and an inventory of all bicycle parking facilities observed on public property within the study area.

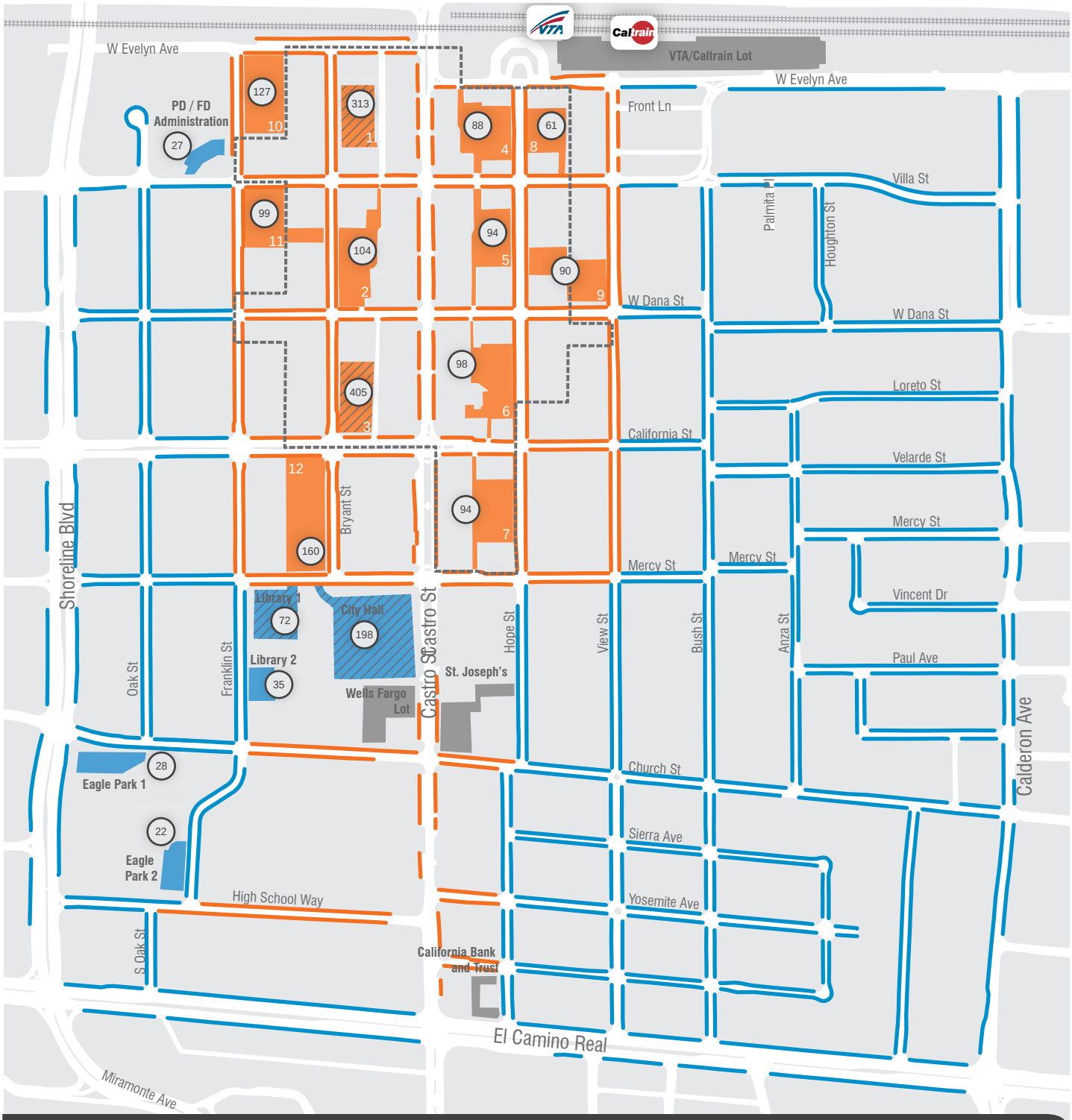
The Downtown Parking Study is focused on public parking, therefore private parking facilities have not been included in the comprehensive inventory of the downtown parking supply. Three private parking lots (the Wells Fargo Lot at Castro and Church Streets, the St. Joseph's Church Lot at Castro and Church Streets, and the California Bank and Trust Lot at Castro Street and El Camino Real) were included in the study for comparative purposes. Similarly, the Downtown Mountain View Caltrain/JPB lot at West Evelyn Avenue and View Street was also included in the study. Although these facilities are included in the analysis portion of the study, they are not part of the general supply of City owned public parking facilities and have not been included in the tables and totals presented in this report unless explicitly noted.

Study Area Boundaries and Divisions

The Downtown Parking Study includes a large, 65 block study area bordered by West Evelyn Avenue, South Shoreline Boulevard, West El Camino Real, and Calderon Avenue. This area includes the downtown's commercial core along and around Castro Street as well as the surrounding residential neighborhoods to the east, west, and south. For the purposes of data collection, analyses, and presentation, this large study area has been divided into a "core" and a "periphery." The study area, its division into a core and periphery, and all of the on and off-street facilities included therein, is shown in Figure 1.2.1.

The core area is intended to capture the majority of the commercial activity in the downtown and includes the 16 blocks bounded by West Evelyn Avenue, Franklin Street, View Street, and Mercy Street, as well as the portion of Castro Street and its adjoining side streets extending between Mercy Street and El Camino Real. All other off-street lots and on-street parking within the study area is part of the "periphery." The periphery is intended to include parking facilities not immediately related to the commercial core of downtown. The periphery includes some public parking facilities such as the City Hall and Library parking lots as well as on-street parking in the residential areas surrounding the commercial center of the downtown. The core and periphery divisions of the study area are used throughout this report in the analysis and presentation of parking supply and utilization data.

Figure 1.2.1 also shows the geographic extent of the Parking Maintenance Assessment District boundary as a dashed line within the core area. The Parking Maintenance Assessment District (PMAD) is a geographically defined district where property owners included within the district boundaries pay an annual assessment to support the maintenance of the district's public parking facilities. A comprehensive discussion of the PMAD, including an analysis of current utilization trends at specific PMAD facilities, will be included in subsequent sections of this report. Within this larger discussion of downtown supply and utilization, analysis and reporting of parking supply and utilization at PMAD facilities is included within the discussion of the core area.



Legend

Core Area

Total Spaces 2,855

- Off-Street 1,729
- On-Street 1,125

Periphery

Total Spaces 2,814

- Off-Street 382
- On-Street 2,432

- 160 Total spaces in lot
- Parking Structure or Underground Lot
- Other lots
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 1.2.1 Study Area

Inventory of Existing Parking Supply

As the first task in characterizing current parking usage in the Downtown, a detailed inventory of the public parking supply, public bicycle racks and lockers, and loading zones was conducted. Once complete, this inventory was developed into a spatial database using publicly available aerial photographs and GIS data from the City. The results of this inventory are presented in the subsequent tables, figures, and discussion.

Inventory Methodology

The inventory of the existing downtown parking supply was conducted in late July of 2010 for the entirety of the study area including all of the on-street blockfaces and off-street facilities shown in Figure 1.2.1. The inventory was completed on foot by consultant staff, with findings compared against data from previous studies and information recorded during the later data collection phases of this study.

On-street parking was inventoried for all sides of all public thoroughfares contained within the boundaries of West Evelyn Avenue, South Shoreline Boulevard, West El Camino Real, and Calderon Avenue. The number of spaces and signage dictating time restrictions, enforcement hours and days, or other information impacting parking were noted and recorded by blockface. Since the City of Mountain View does not individually designate on-street spaces, the number of spaces per blockface was estimated based on standard, 20 foot lengths. Because on-street spaces are not marked, however, the actual capacity of each blockface may vary slightly depending on individual parking behavior.

For all off-street lots included in the study, the number of spaces and signage dictating time restrictions, enforcement hours and days, or other information impacting parking were noted. Handicap parking and other designated restricted parking spaces were also noted.

Inventory Overview

All told, the supply of public parking within the study area included 5,669 public parking spaces; 3,558 on-street spaces and 2,111 off-street spaces. Table 1.2.1 shows the division of parking spaces between the core and periphery as well as each area's percentage of the total, study area-wide parking supply.

Table 1.2.1: All Downtown Public Parking

Parking Type	Study Area		Core		Periphery	
	#	%	#	%	#	%
On-street	3,558	63%	1,126	39%	2,432	86%
Off-Street	2,111	37%	1,729	61%	382	14%
Total	5,669	100%	2,855	100%	2,814	100%

As the table indicates, although core and periphery each include about half (just over 2,800) of the total 5,669 parking spaces in the study area, they differ substantially with respect to the type of parking they contain. Nearly two-thirds of the public parking in the core is located in off-street lots and structures. Parking in the periphery by contrast is concentrated largely on-street and includes only a handful of off-street public lots.

The data shown in Table 1.2.1 includes all parking spaces within the study area's public facilities, regardless of category or restriction. Table 1.2.2, below, presents a modified version of this data that

excludes handicap spaces, loading and drop-off zones, and any other parking subject to unusual restrictions that render it unusable or inaccessible for standard parking. The study area-wide count of the remaining "standard" spaces is shown in Table 1.2.2 presented below.

Table 1.2.2: All "Standard" Downtown Public Parking

Parking Type	Study Area		Core		Periphery	
	#	%	#	%	#	%
On-street	3,526	64%	1,095	40%	2,431	88%
Off-Street	2,014	36%	1,673	60%	341	12%
Total	5,540	100%	2,768	100%	2,772	100%

Source: Wilbur Smith Associates, 2010

Time Restrictions

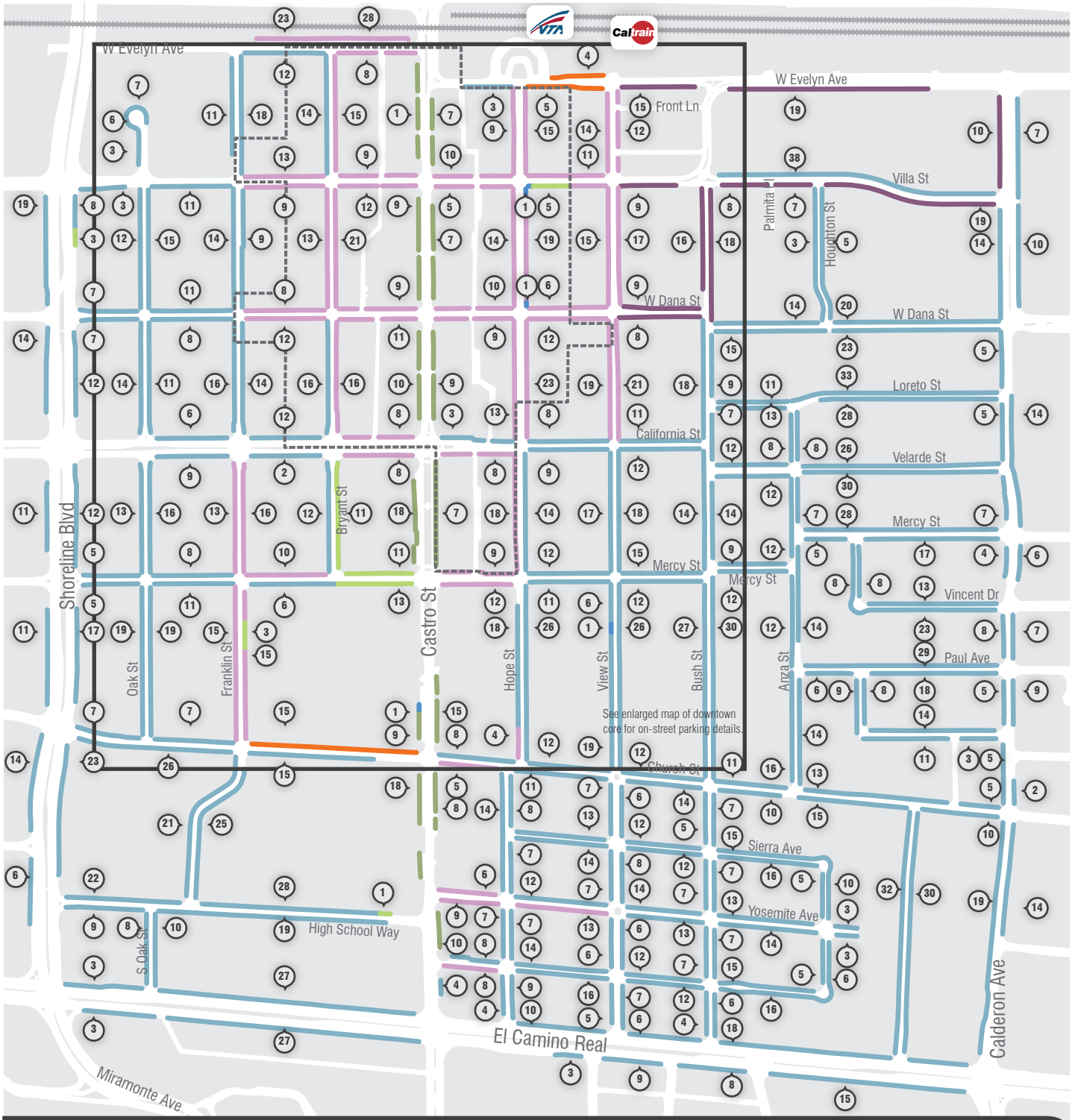
The on- and off-street public parking provided in the downtown study area is subject to a variety of time restrictions. Restrictions vary significantly in the time they allow, the span of hours they are active, and the days they apply.

Table 1.2.3, below presents a summary of time restriction categories for all on-street parking within the core and periphery study areas. Figures 1.2.2 and 1.2.3 includes a detailed map of on-street time restrictions. As the table indicates, most of the on-street parking supply within the core study area is subject to 2-hour time restrictions. The exceptions include on-street parking along Castro Street that is limited to 1-hour, segments on West Evelyn Avenue and Church Street that have other restrictions and a few segments on Villa Street, Bryant Street and Mercy Street that are limited to under one hour.

Table 1.2.3: All On-Street Parking by Time Restriction

Space Type	Study Area		Core		Periphery	
	#	%	#	%	#	%
Unrestricted	2,583	73%	346	31%	2,237	92%
5-hour	138	4%	0	0%	138	6%
2-hour	630	18%	580	52%	50	2%
1-hour	128	4%	128	11%	0	0%
Under 1 hour	47	1%	41	4%	6	0%
Total Standard Spaces	**3,526**	**99%**	**1,095**	**97%**	**2,431**	**100%**
Handicap	5	0%	4	0%	1	0%
Other restrictions*	27	1%	27	2%	0	0%
All On-Street Spaces	**3,558**	**100%**	**1,126**	**100%**	**2,432**	**100%**

** "Other restrictions" include on-street drop off and loading zones, shuttle zones, or any other on-street space where parking is severely restricted for all or most of the day*



Legend

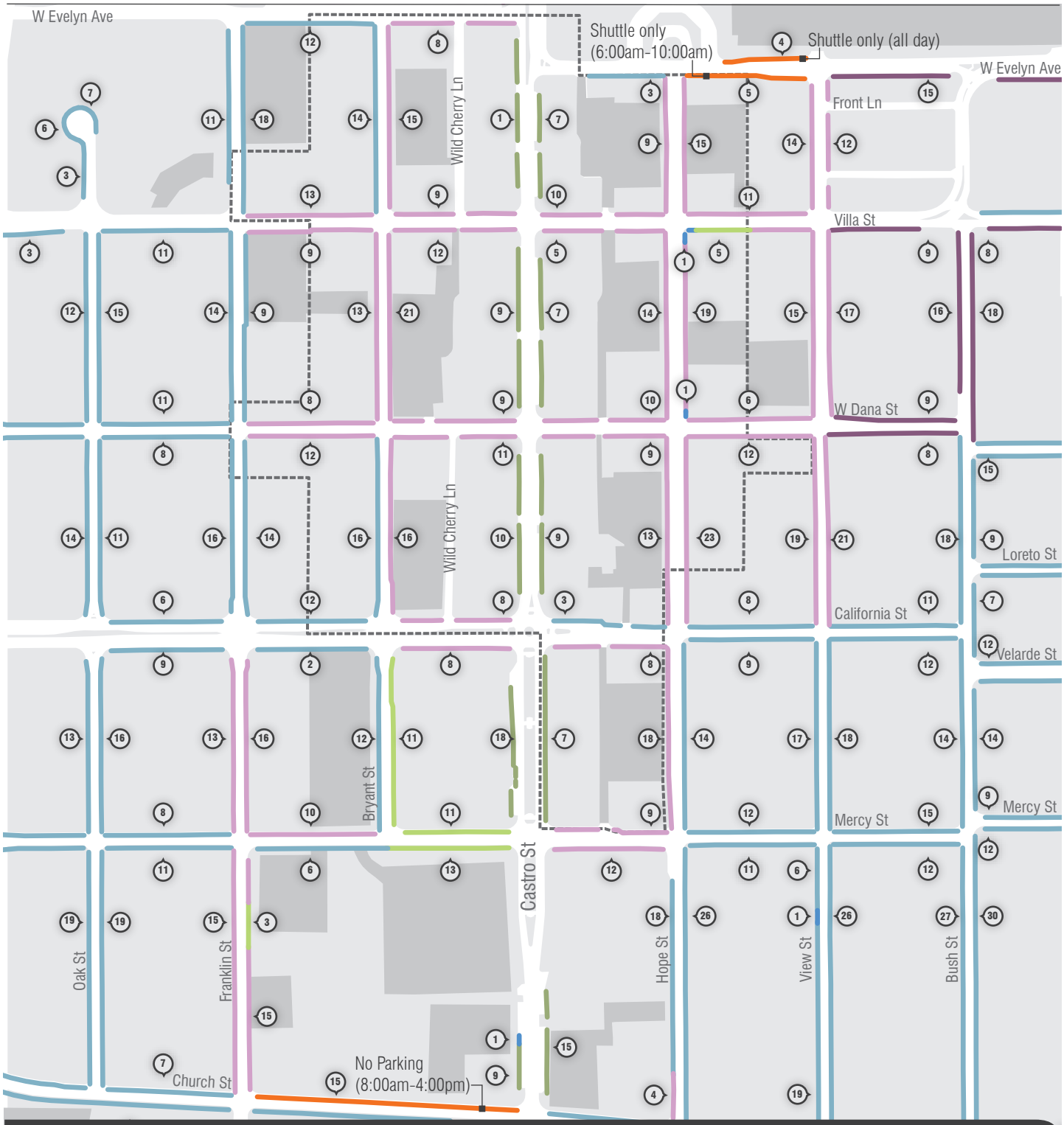
Parking Information

- Short-term
- 1 Hour
- 2 Hour
- 5 Hour
- Unrestricted
- Other Restrictions
- Handicap
- 10 Total spaces on blockface
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure 1.2.2 On-Street Parking



Legend

Parking Information

- Short-term
- 1 Hour
- 2 Hour
- 5 Hour
- Unrestricted
- Other Restrictions
- Handicap
- Parking district boundary
- 10 — Total spaces on blockface

NORTH

400 800 FEET

Figure 1.2.3 On-Street Parking

On-street parking in the periphery is mostly unrestricted. There are segments of 5-hour parking on West Evelyn Avenue, Calderon Avenue, Villa Street, Bush Street, and Dana Street in the area near the Caltrain/JPB Lot. In the area near the Library, there are 2-hour and under 1-hour restrictions along Franklin Street from Mercy Street to Church Street. While there are a substantial number of off-street public handicap spaces (72), only 5 on-street handicap parking spaces were observed in the downtown. Two of these spaces are located on Hope Street, with the others located on Villa Street, Castro Street, and View Street.

Most public off-street parking in the downtown is also subject to time restrictions. Tables 1.2.4, 1.2.5, and 1.2.6 and Figure 1.2.4 detail the locations and time restriction categories of different off-street public parking lots throughout the downtown.

Table 1.2.4 below provides a summary of all downtown off-street parking by time restriction category. As the table indicates, the majority of public off-street parking is located in the core and most of this parking is subject to a 2-hour time restriction. In the periphery, public off-street parking is largely unrestricted but is located in lots generally associated with specific uses (City Hall, Eagle Park, and the Library).

Table 1.2.4: All Off-Street Parking by Time Restriction

Space Type	Study Area		Core		Periphery	
	#	%	#	%	#	%
Unrestricted	467	22%	126	7%	341	89%
3-hour	95	5%	95	5%	0	0%
2-hour	1,434	68%	1,434	83%	0	0%
1-hour	18	1%	18	1%	0	0%
Under 1 hour	0	0%	0	0%	0	0%
Total Standard Spaces	**2,014**	95%	**1,673**	97%	**341**	89%
Handicap	72	3%	56	3%	16	4%
Other restrictions*	25	1%	0	0%	25	7%
All public Off-Street Spaces	**2,111**	100%	**1,729**	100%	**382**	100%

** "Other restrictions" include 25 spaces in the Fire/Police Administration lot that are open to public use for Fire/ PD related business only.*

Tables 1.2.5 and 1.2.6 provide a detailed breakdown of off-street parking by facility in the core and periphery respectively. All of the off-street parking in the core is restricted to 2 hours with the exception of Lot 11 (3-hour) and Lot 10 (unrestricted) (Lot 12, the temporary surface lot at Bryant and Mercy Streets, is also restricted to 2 hour parking). Lot 10 is currently designated as overflow Caltrain parking and is nominally restricted to transit riders before 10:00 a.m. on weekdays. In practice, however, this designation is not enforced and Lot 10 is effectively an unrestricted parking lot.

Legend

General Public Lots

- 2 hour
- 3 hour
- Unrestricted
- Other public lots
- Selected private lots and Caltrain/VTA lot

160 5 — Handicap Spaces; Total spaces in lot

- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure 1.2.4 Off-Street Parking Locations

Table 1.2.5: Core Area City-Owned Public Parking Facilities

Facility Name	Total Spaces	Handicap Spaces	Standard Spaces	Time Restriction	Spaces where permit parking is permitted
Parking Structure (Lot 1)	313	6	307	2 hour	160
Lot 2	104	7	97	2 hour	0
Parking Structure (Lot 3)	405	9	396	2 hour*	146
Lot 4	88	4	84	2 hour	0
Lot 5	94	5	89	2 hour	89
Lot 6	98	4	94	2 hour	94
Lot 7	94	4	90	2 hour	90
Lot 8	61	3	58	2 hour	58
Lot 9	90	4	86	2 hour	86
Lot 10	127	1	126	Unrestricted**	0
Lot 11	99	4	95	3 hour	95
Lot 12	160	5	155	2 hour	155
All Core Area Public Parking	**1,729**	**56**	**1,673**		**884**

**18 1-hour spaces located on first floor*
***Lot is nominally reserved for Caltrain riders before 10:00am on weekdays but designation is not binding or enforced.*

As shown in Table 1.2.6, the off-street public parking facilities included in the periphery are all unrestricted with the exception of the Police and Fire Department Administration Visitor's Lot where spaces are reserved for visitor parking. The underground City Hall lot is the largest off-street facility included in the periphery. The 198 spaces shown for this lot do not include spaces designated as reserved for City pool cars and City council members.

Table 1.2.6: Periphery City-Owned Public Parking Facilities

Facility Name	Total Spaces	Handicap Spaces	Standard Spaces	Time Restriction
PD / FD Administration	27	2	0	3 hour visitor parking
Library 1	72	4	68	Unrestricted
Library 2	35	2	33	Unrestricted
City Hall Lot*	198	6	192	Unrestricted
Eagle Park 1**	22	2	20	Unrestricted
Eagle Park 2***	28	0	28	Unrestricted

**Does not include spaces reserved for City pool cars and council members* ***Southeast Lot* ****Northwest lot*

Parking Restriction Hours and Days

Whether on-street or off-street, nearly all time restricted parking is only subject to those restrictions on certain hours and days. The following figures and tables summarize the range of different posted restriction hours and days found throughout the downtown. It is important to note that the information presented here is based on the *signed* restrictions posted on each street or at each blockface.

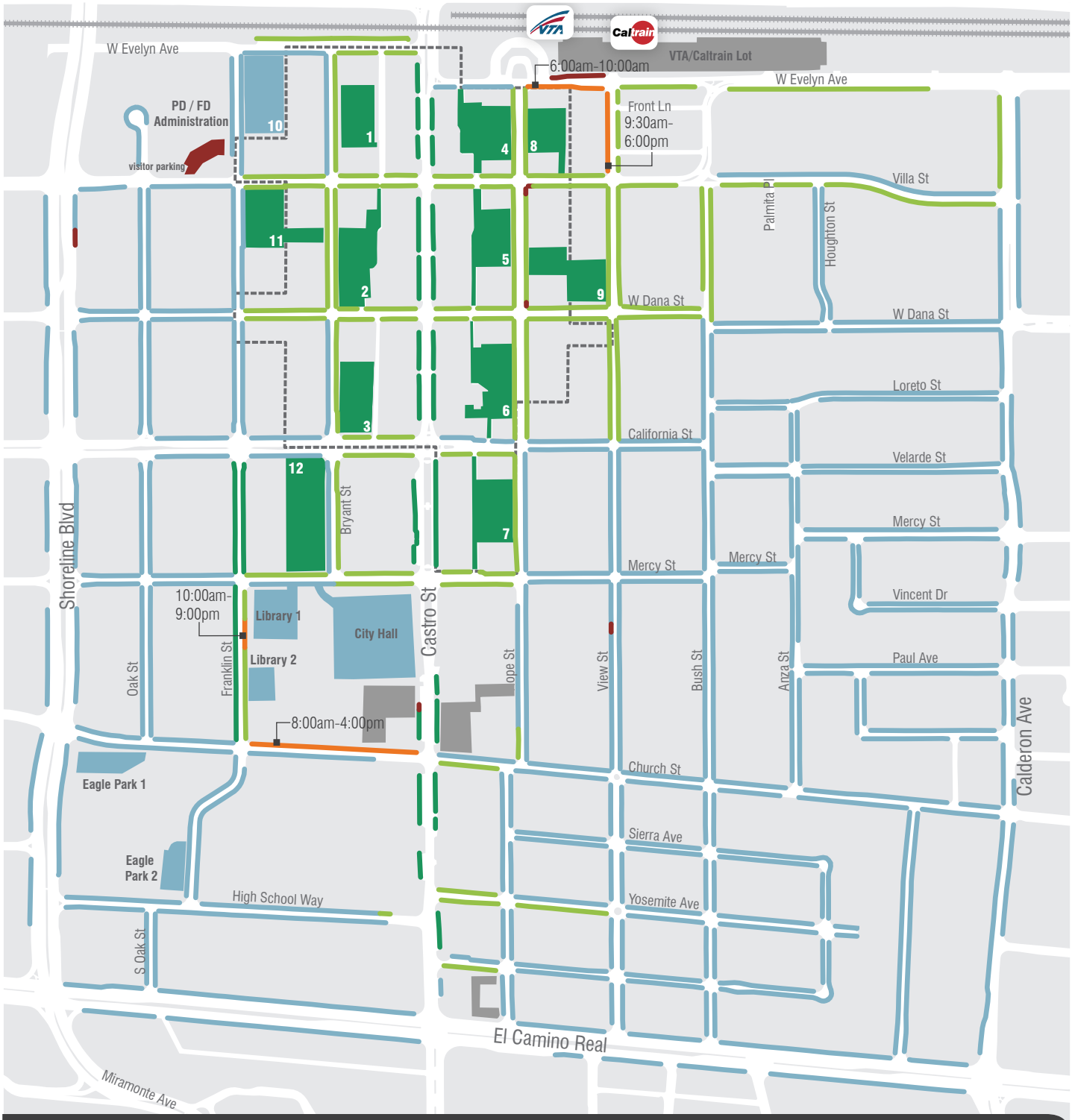
Parking restriction times are summarized in Table 1.2.7 and are mapped in Figure 1.2.5. As the table and map indicate, most of the off-street parking facilities in the Downtown core and the on-street parking supply along Castro Street have time restrictions in effect from 8:00 a.m. to 5:00 p.m.. There are also a small number of blockfaces along Franklin Street where parking is signed as restricted from 8:00 a.m.-5:00 p.m.. Most of the remaining on-street parking supply in both the core and the periphery is

restricted from 9:00 a.m. to 6:00 p.m.. Finally, there are a number of areas where parking is assumed to be restricted 24 hours a day, 7 days a week or where another unique or special restriction is in place. These exceptions are indicated in Figure 1.2.5. It is also important to note that Table 1.2.7 and Figure 1.2.5 refer to "restriction hours" in terms of the span of hours when signed time restrictions are enforced. The City-owned parking structures, City Hall lot, and Library garage are completely closed to the public in the late night/early morning but this is not shown or reflected in the below table and figure.

Table 1.2.7: Restriction Times for All Downtown Parking

	Study Area		Core		Periphery	
Parking Type	#	%	#	%	#	%
On-street						
Unrestricted	2,583	73%	346	31%	2,237	92%
Always restricted	12	0%	8	1%	4	0%
9am-6pm	764	21%	591	52%	173	7%
8am-5pm	159	4%	144	13%	15	1%
Other	40	1%	37	3%	3	0%
All On-Street	**3,558**	**100%**	**1,126**	**100%**	**2,432**	**100%**
Off-Street						
Unrestricted	467	22%	126	7%	341	89%
Always restricted	97	5%	56	3%	41	11%
9am-6pm	0	0%	0	0%	0	0%
8am-5pm	1,547	73%	1,547	89%	0	0%
Other	0	0%	0	0%	0	0%
All Off-Street	**2,111**	**100%**	**1,729**	**100%**	**382**	**100%**
Total	**5,669**		**2,855**		**2,814**	

Similar to the variety of parking restriction times, signed restrictions are also enforced on different days of the week. Table 1.2.8 and Figure 1.2.6 display information on signed restrictions by day for all downtown parking. With two minor exceptions at West Evelyn Avenue and View Street, all restricted on-street parking is signed as being in effect Monday-Saturday. Off-street, however, most parking is signed as being restricted only Monday-Friday. Lots 4 and 6 are the major exception and are signed as being restricted Monday- Saturday.



Legend

Restriction Hours

- Restricted all hours
- 8:00am-5:00pm
- 9:00am-6:00pm
- Other restriction hours
- Unrestricted
- Other lots
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure 1.2.5 On-Street Parking Restriction Hours

Table 1.2.8: Restriction Days for All Downtown Parking

	Study Area		Core		Periphery	
Parking Type	#	%	#	%	#	%
On-street						
Unrestricted	2,583	73%	346	31%	2,237	92%
All Days	15	0%	8	1%	7	0%
Monday - Friday	19	1%	19	2%	0	0%
Monday - Saturday	941	26%	753	67%	188	8%
All On-Street	**3,558**	**100%**	**1,126**	**100%**	**2,432**	**100%**
Off-Street						
Unrestricted	467	22%	126	7%	341	89%
All Days	97	5%	56	3%	41	11%
Monday - Friday	1,369	65%	1,369	79%	0	0%
Monday - Saturday	178	8%	178	10%	0	0%
All Off-Street	**2,111**	**100%**	**1,729**	**100%**	**382**	**100%**
Total	**5,669**		**2,855**		**2,814**	

Other Downtown Parking Facilities

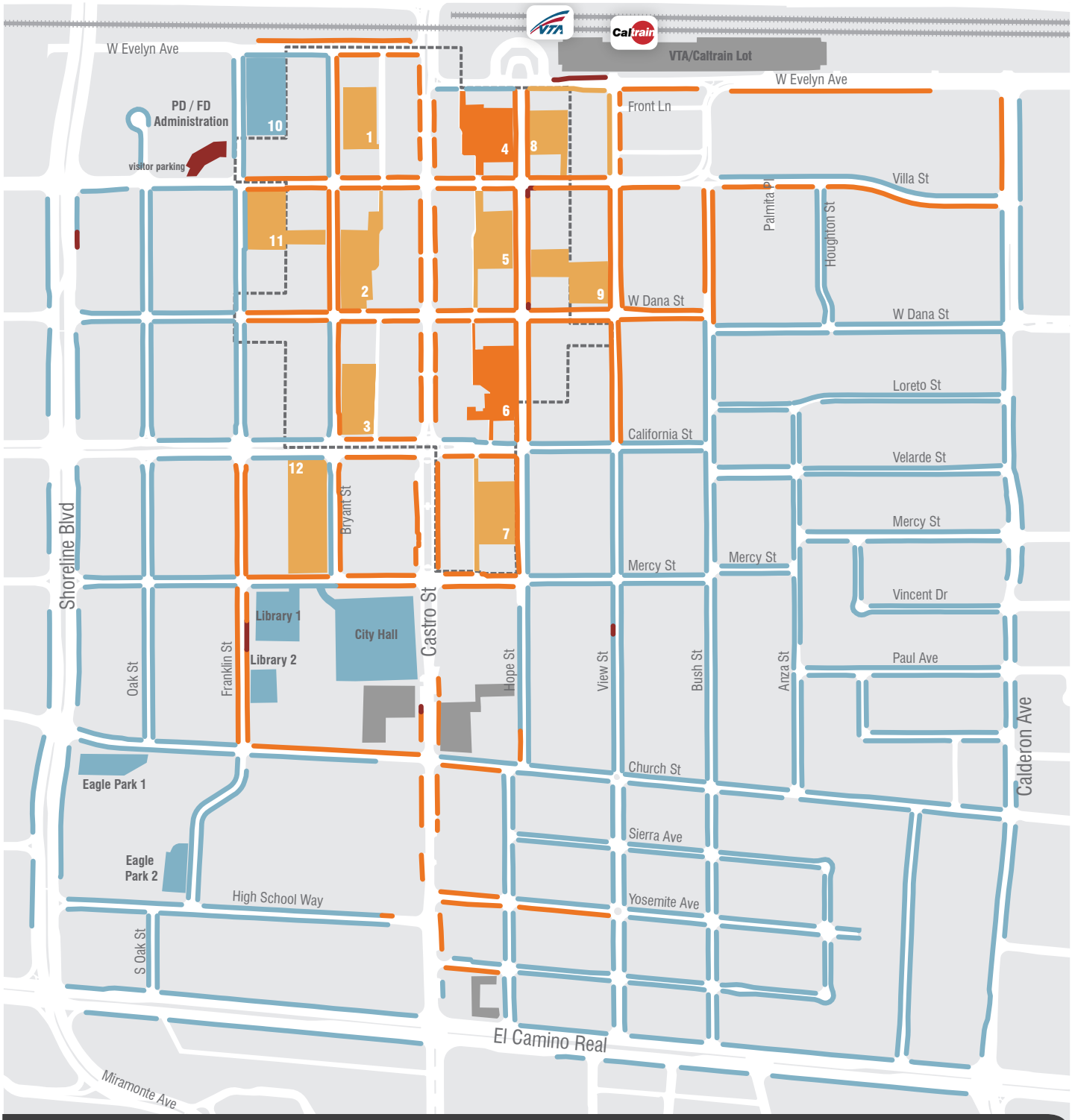
Although the focus of the Downtown Parking Study is on public, City-owned parking, several additional parking facilities have been included in the study since they play an important role in the downtown parking system and it is important to understand their influence. These include the Downtown Mountain View Caltrain/Penninsula Corridor Joint Powers Board (JPB) Parking Lot located along West Evelyn Avenue at View Street, the Wells Fargo Lot at Castro and Church Streets (just south of City Hall), the St. Joseph's Church Lot at Castro and Church Streets, and the California Bank and Trust Lot at Castro Street and El Camino Real. The locations of these lots are shown in grey on Figure 1.2.4. Table 1.2.9, below, presents basic information regarding the number of spaces in each lot.

Table 1.2.9: Other Downtown Parking Facilities

Facility Name	Total Spaces	Handicap Spaces	Standard Spaces
Downtown Caltrain/JPB Lot*	330	12	318
St. Joseph's Church	99	3	96
Wells Fargo	76	4	72
California Bank and Trust	14	1	13

**Does not include parking spaces restricted to taxi use*

The St. Joseph's Church Lot, Wells Fargo Lot, and California Bank and Trust Lot are all private facilities and their use is restricted at all times. The Caltrain/JPB lot is open to public use but charges for parking on a 24 hour basis, 7 days a week. Specific details and observed utilizations of these lots will be discussed throughout this report as they become relevant to the larger analysis of the downtown public parking supply.



Legend

Restriction Days

- Restricted all days
- Monday-Saturday
- Monday-Friday
- Unrestricted
- Other lots
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure 1.2.6 Parking Restriction Days

Loading Zones

As part of the comprehensive parking inventory, passenger and commercial loading zones were documented throughout the downtown. The location, type, and other pertinent details of all loading zones observed are recorded in Figures 1.2.7 and 1.2.8. Loading zones observed included standard yellow curbs indicating a commercial loading zone, striped loading "areas" in some off-street lots, and a range of other designations that are individually annotated in the figures. All loading zones were measured in feet using a roller. In most cases, no signage noting hours or days of restriction was posted alongside loading zones but where signs were posted details have been individually noted in Figures 1.2.7 and 1.2.8.

The majority of the loading zones in the downtown core and periphery study areas are located along or in the off-street parking lots connected to Wild Cherry and Blossom Lane. These alleys are shown on Figure 1.2.8 and are located behind the buildings fronting Castro Street and run parallel to it, flanking Castro Street on both sides. Many of the curb markings in Wild Cherry Lane between West Evelyn Avenue and Villa Street in particular have faded or deteriorated past the point of easy recognition. As the images in Figure 1.2.9 indicate, the loading zones along Wild Cherry Lane are currently showing patches of peeling red and yellow curb paint and commercial vehicles and trucks park and load wherever space is available regardless of curb markings.

Figure 1.2.9: Loading Conditions along Wild Cherry Lane between West Evelyn Avenue and Villa Street

Legend

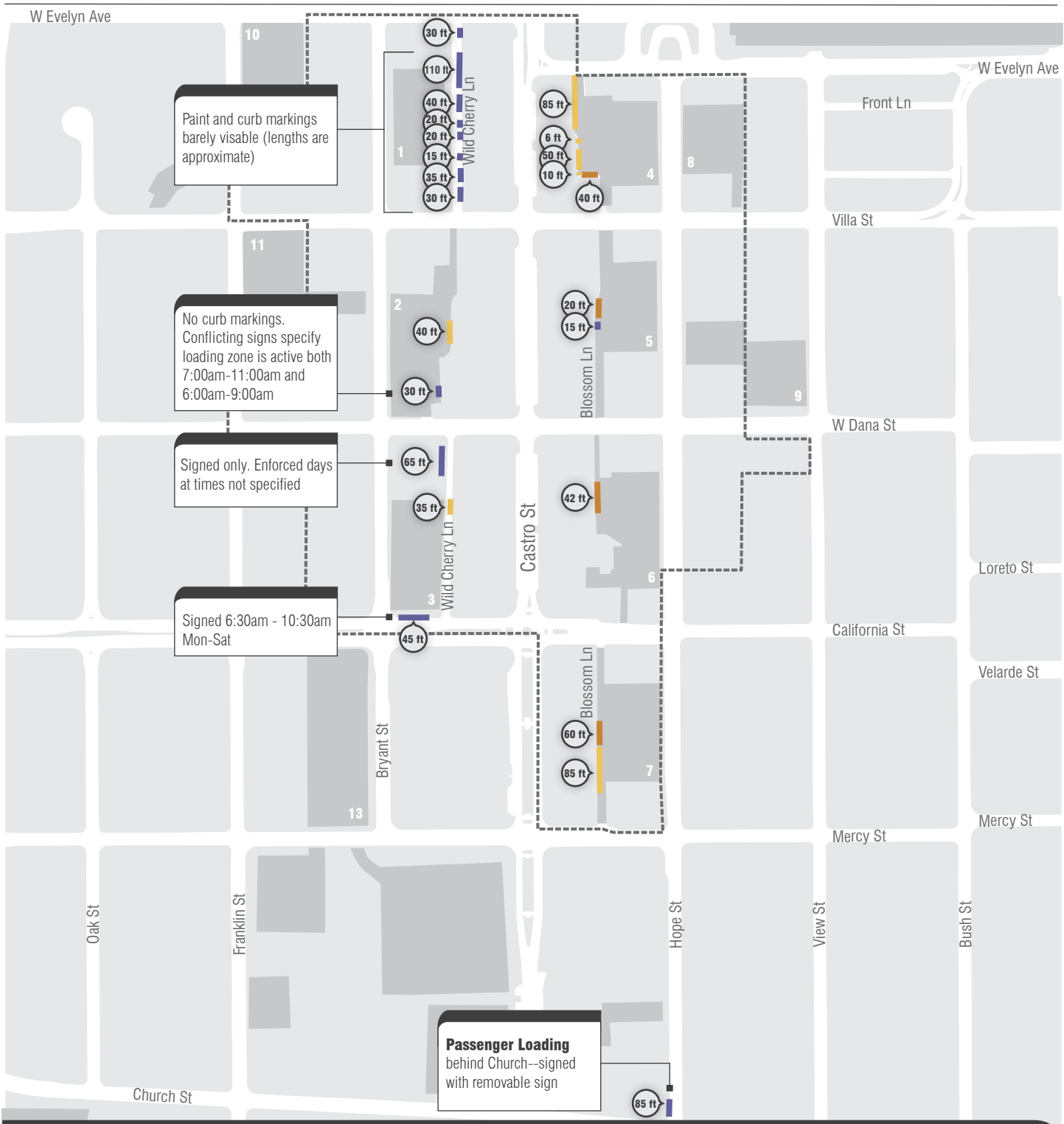
- Yellow Curb
- Striped Zone
- Other
- Off-Street Parking
- Parking district boundary
- 85 ft Length of Loading Zone
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 1.2.7 Loading Zones



Legend

- Yellow Curb
- Striped Zone
- Other
- Off-Street Parking
- Parking district boundary
- 85 ft Length of Loading Zone

NORTH

400 800 FEET

Figure 1.2.8 Loading Zones

Bicycle Parking Facilities

Public bicycle parking facilities were also examined as part of the parking inventory effort. For all parts of the designated study area the number and location of bicycle racks and lockers was recorded, along with a description of their type and capacity. Additional bicycle rack/locker data was also collected at the Downtown Mountain View Caltrain/JPB Parking Lot.

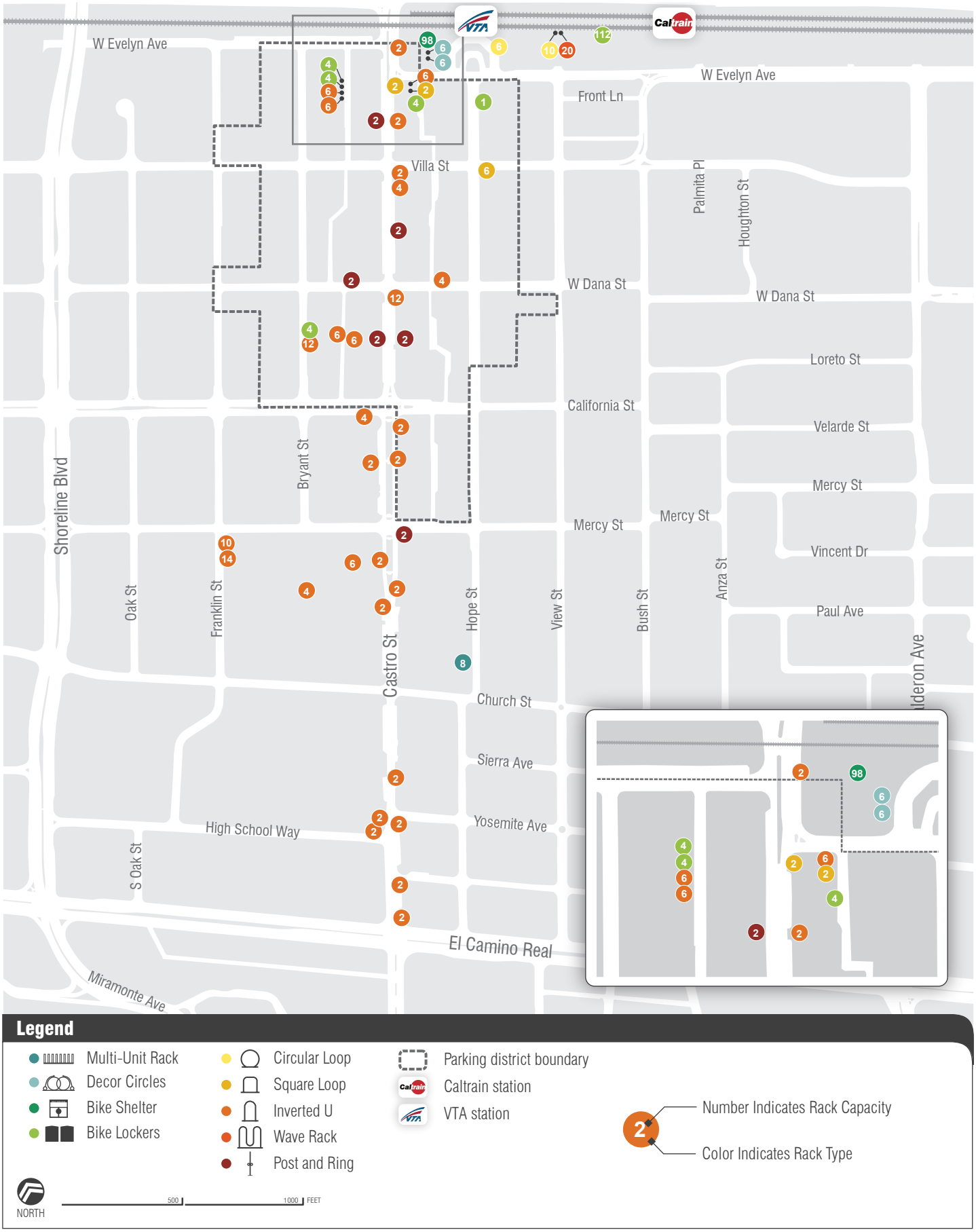
Currently, there are 76 bike racks and 12 key-operated lockers located throughout the downtown core study area with a combined capacity to hold approximately 176 bicycles. Most of these bicycle facilities are located along Castro Street, in the pedestrian alleys (connecting the Castro Street building frontages to the parking behind), beside bus stops and street corners, and in front of or located underground of large buildings such as the public parking structure, CVS Pharmacy, Library, and City Hall. The bicycle facilities at the Caltrain/JPB station include a bicycle shelter (which holds approximately 98 bicycles), 112 key-operated lockers and 13 racks for a combined capacity of 260 bicycles. Most of these racks and lockers are located along the station platform and the bus turnaround. Table 1.2.10 below summarizes the bicycle facilities observed throughout the downtown. Figure 1.2.11 maps each individual rack, locker (or set of racks or lockers) and categorizes them by type and capacity.

Table 1.2.10: Bicycle Facility Inventory Summary

Area	Bicycle Racks	Lockers	Approximate Capacity
Castro Street	23	0	46
Pedestrian Alleys	7	0	14
Parking Structure @ Bryant (Lot 1)	6	8	20
Parking Structure @ Bryant & California Streets (Lot 3)	9	4	22
Library	12	0	24
City Hall	5	0	10
Other	14	0	40
Downtown Total	**76**	**12**	**176**
Caltrain/JPB Station*	13	112	260
Total	**89**	**124**	**436**

**Includes bicycle shelter which has a capacity to hold approximately 98 bicycles.*

Figure 1.2.10: Bicycle Racks at Library and Caltrain/JPB Station



Legend

- Multi-Unit Rack
- Decor Circles
- Bike Shelter
- Bike Lockers
- Circular Loop
- Square Loop
- Inverted U
- Wave Rack
- Post and Ring
- Parking district boundary
- Caltrain station
- VTA station
- Number Indicates Rack Capacity
- Color Indicates Rack Type

NORTH

500 1000 FEET

Figure 1.2.11 Bicycle Parking

1.3 Parking Utilization

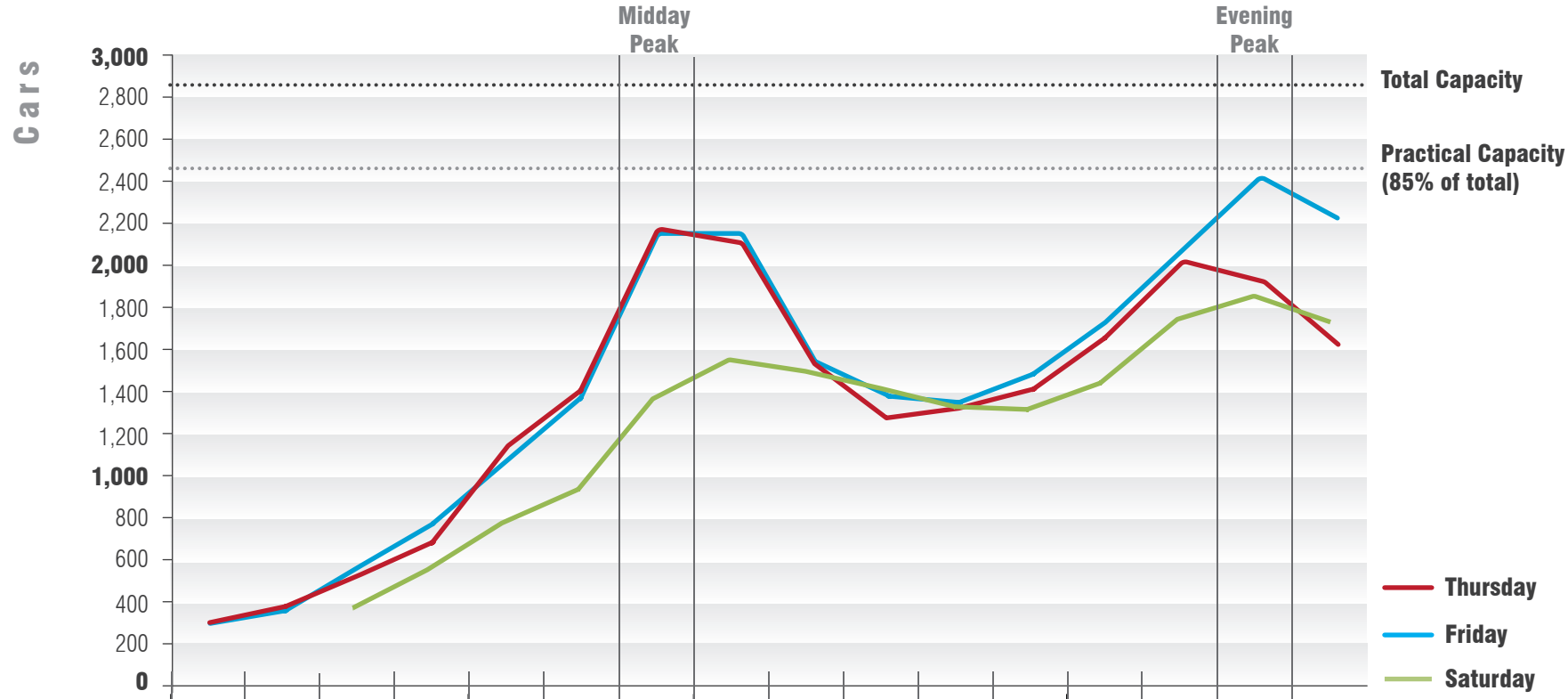
During late September and early October, parking utilization data was collected at all of the core and periphery parking facilities described above in section 1.2. Data collected included writing down vehicle license plates and counting the number of cars parked in lots and on-street throughout the downtown. This data paints a detailed picture of how public parking is currently used in and around Downtown Mountain View. Prior to a discussion of the major findings of this effort, it is important to briefly define a number of terms that are used when discussing parking utilization.

- **Occupancy:** The number of cars parked in a specific area, lot, or blockface during one period of observation. Often expressed as the percentage of the total physical supply that is occupied by parked cars.
- **Practical Capacity:** The occupancy level or number of vehicles that can be parked in a facility or area before it becomes difficult for a driver to find a space without having to circle or "cruise" for parking. Practical capacity is typically set at an 85% occupancy level. For on-street parking this equates to roughly 1 vacant space per blockface.
- **Peak:** The time period associated with the highest observed level of occupancy in a specific area or parking facility. In Mountain View, two overall peaks in parking activity were observed; one on Thursday from 12:00 p.m.-1:00 p.m., and one on Friday evening from 8:00 p.m.-9:00 p.m..
- **Duration of Stay:** Refers to the length of time a vehicle is parked in a specific parking space.
- **Parking Event:** A parking event refers to each instance where a single, unique vehicle is observed parked in a single, unique space. A car driving downtown, parking in Lot 2 for an hour, and then driving away would thus be categorized as single one hour parking event. A single vehicle could potentially be involved in multiple parking events over the course of a day if it was moved and reparked in different locations around the downtown.

It is also important to note at the outset of this section that utilization data and analysis are presented separately for the downtown core and periphery. This is in part because the core area was the subject of a significantly more intensive data collection effort aimed at capturing the hour to hour details of visitor and customer parking movements. The larger geographic area and more varied land uses in the periphery make it difficult to meaningfully report aggregate utilization statistics (such as an overall occupancy percentage or an average length of stay) for the entire area. Instead, parking utilization metrics for the periphery are discussed in terms of individual neighborhoods and facilities.

Parking in the Core

Data collection for the core area was undertaken on Thursday, September 23rd, Friday, September 24th, and Saturday, September 25th. All core area data was collected on hourly cycles between the hours of 6:00 a.m. and 10:00 p.m. on Thursday the 23rd, and Friday the 24th, and from 8:00 a.m. to 10:00 p.m. on the Saturday the 25th. Data collection included the recording of license plates for all parking facilities within the core area on Thursday and Friday and basic occupancy counts (number of cars) for all facilities on Saturday. License plate data was used to determine how long vehicles parked in one location and whether they later reparked elsewhere in the downtown.



Space Type & Day	Total Spaces	6am-7am	7am-8am	8am-9am	9am-10am	10am-11am	11am-12pm	12pm-1pm	1pm-2pm	2pm-3pm	3pm-4pm	4pm-5pm	5pm-6pm	6pm-7pm	7pm-8pm	8pm-9pm	9pm-10pm
Thursday																	
Thursday Overall	**2855**	**12%**	**14%**	**20%**	**25%**	**41%**	**50%**	**77%**	**75%**	**55%**	**45%**	**47%**	**50%**	**59%**	**71%**	**68%**	**58%**
Thursday On-Street	1126	22%	26%	31%	36%	44%	52%	73%	69%	52%	48%	50%	54%	62%	70%	66%	58%
Thursday Off-Street	1729	5%	7%	13%	18%	39%	49%	79%	78%	56%	44%	46%	48%	57%	72%	69%	58%
Friday																	
Friday Overall	**2855**	**11%**	**14%**	**21%**	**28%**	**39%**	**49%**	**76%**	**76%**	**55%**	**49%**	**48%**	**53%**	**61%**	**74%**	**85%**	**79%**
Friday On-Street	1126	21%	25%	32%	35%	43%	52%	73%	70%	55%	50%	48%	52%	63%	73%	79%	77%
Friday Off-Street	1729	5%	6%	14%	23%	36%	48%	78%	80%	55%	49%	48%	53%	60%	74%	89%	80%
Saturday																	
Saturday Overall	**2855**	**NA**	**NA**	**13%**	**19%**	**27%**	**33%**	**48%**	**54%**	**52%**	**49%**	**46%**	**46%**	**50%**	**61%**	**65%**	**60%**
Saturday On-Street	1126	NA	NA	22%	30%	38%	43%	50%	58%	55%	57%	53%	51%	53%	66%	70%	68%
Saturday Off-Street	1729	NA	NA	8%	13%	20%	26%	46%	51%	50%	45%	42%	42%	48%	57%	61%	55%

Figure 1.3.1 OVERALL CORE AREA PARKING OCCUPANCY

Overall occupancy trends

Occupancy levels in the core of Downtown Mountain View fluctuate significantly throughout the day. Figure 1.3.1 presents a combined line graph and table showing the overall, hourly occupancy level for the entire downtown public parking supply for the Thursday, Friday, and Saturday. The table included in Figure 1.3.1 also shows the division between on-street and off-street occupancy levels in the core area. Similar to utilization trends seen in past parking studies, this data shows a clear "double peak" in parking activity in the downtown core that includes both midday and evening periods of high demand.

Peak Hour Occupancies

Peak hour occupancy levels are an important focus for analysis because they provide a glimpse of the parking supply at its most impacted. The highest overall midday peak was observed on Thursday between 12:00 p.m. and 1:00 p.m. when the downtown's parking facilities were 77% occupied and the highest evening peak was observed between 8:00 p.m. and 9:00 p.m. on Friday when the overall occupancy level reached 85%. In general, parking occupancy rates appeared to be similar during the day for Thursday and Friday. Parking occupancy rates on Saturday were observed to be lower than both Thursday and Friday during the day but exceed Thursday's rates during the evening hours. The overall occupancy figures presented in Figure 1.3.1 indicate that most of the time there is ample public parking available in the downtown as a whole. At certain times of day, however, parking usage is high enough that it approaches (or in the case of Friday evenings, reaches) the overall practical capacity level of 85%.

While the overall parking supply only briefly approaches an 85% practical capacity level, parking occupancies are not evenly distributed across all downtown facilities. Certain parking lots and streets have ample parking available throughout the day while others are completely full for hours at a time. Figures 1.3.2 and 1.3.3 illustrate the spatial distribution of parking demand through peak hour "snapshots" of the core downtown from 12:00 p.m.-1:00 p.m. on Thursday and from 8:00 p.m. to 9:00 p.m. on Friday. In Figure 1.3.2, for example, the overall occupancy for the downtown is below practical capacity at 77%, but nearly all of the downtown's off-street public lots are at or above an 85% occupancy rate. Only Lot 11 and the new parking structure (Lot/Parking Structure 3) have a significant amount of capacity remaining. This skewed distribution of parking availability means that a downtown visitor trying to park should ultimately be able to find parking but will likely spend time "cruising" for a space or will be required to park at some distance for their intended destination. Figure 1.3.3 shows a similar scenario for the 8:00 p.m.-9:00 p.m. peak on Friday evenings. At that time, parking is highly occupied in most off-street lots and there is generally very little parking available (although there is availability in Parking Structure 3 and Lots 10 and 12).

Figures 1.3.4 and 1.3.5 present corresponding midday and evening peak hour "snapshots" for the Saturday when occupancy data was collected. Although overall occupancies on Saturday were considerably lower than those observed on weekdays, parking activity levels followed the same basic pattern of peaking first in the middle of the day (from 1:00 p.m.-2:00 p.m.) and then again from 8:00 p.m.-9:00 p.m.. Figure 1.3.4 displays data from the 1:00pm-2:00pm peak for Saturday and shows that parking demand at that time was highly concentrated around the commercial center of downtown (the six block area bounded by West Evelyn Avenue, California Street, Bryant Street, and Hope Street). Outside of those six blocks, most facilities observed had ample capacity available and the core area as a whole was only 54% occupied. Figure 1.3.5 provides a view of the Saturday evening peak hour between 8:00 p.m. and 9:00 p.m.. Similar to the midday peak, higher parking occupancies are still centered on Castro Street. The overall core occupancy is up to 65%, however, and high on-street occupancy rates can be seen to have expanded outward towards the edges of the downtown.

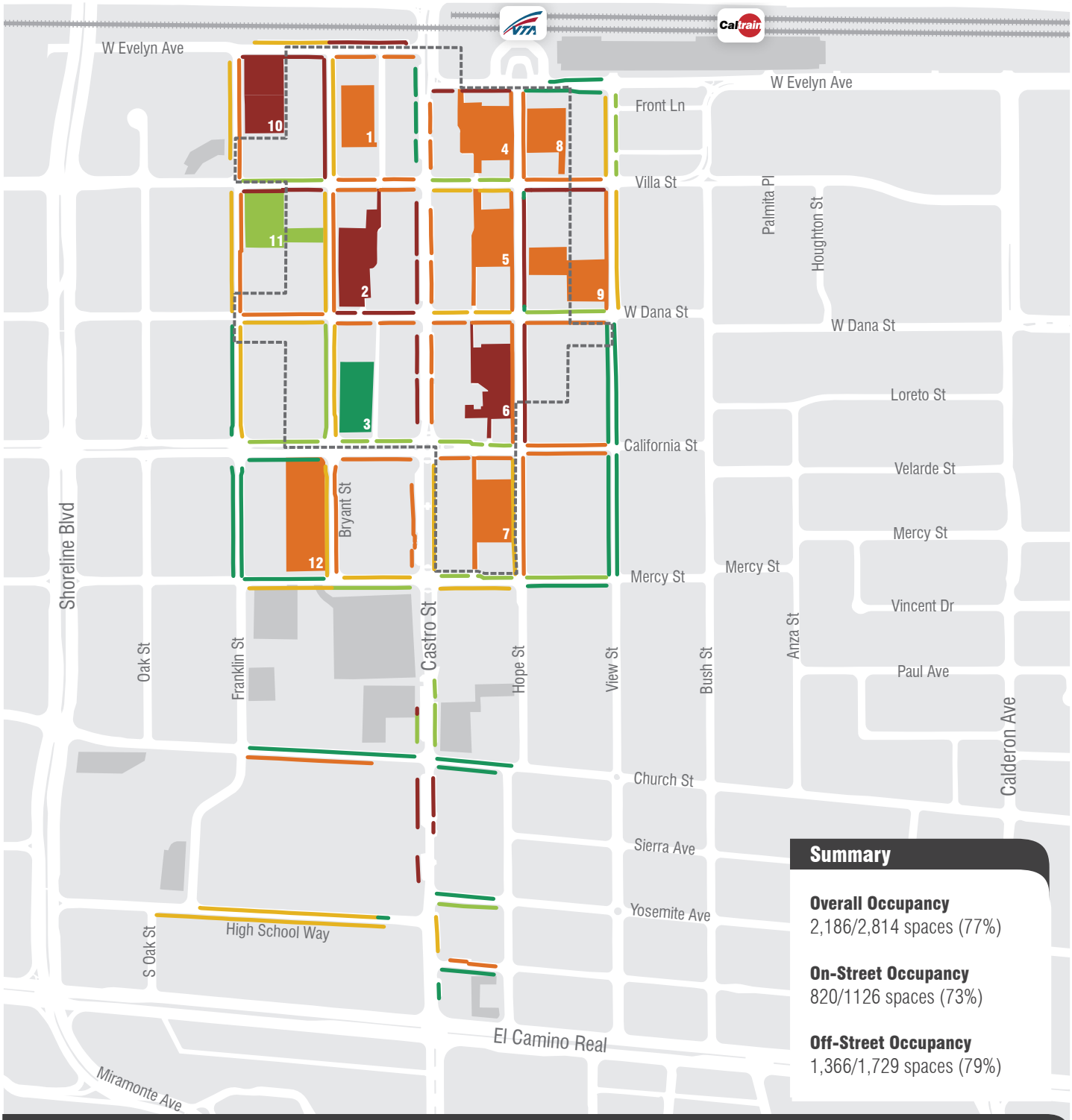


Figure 1.3.2 Midday Peak Hour Parking Occupancy, Thursday 12:00PM - 1:00PM

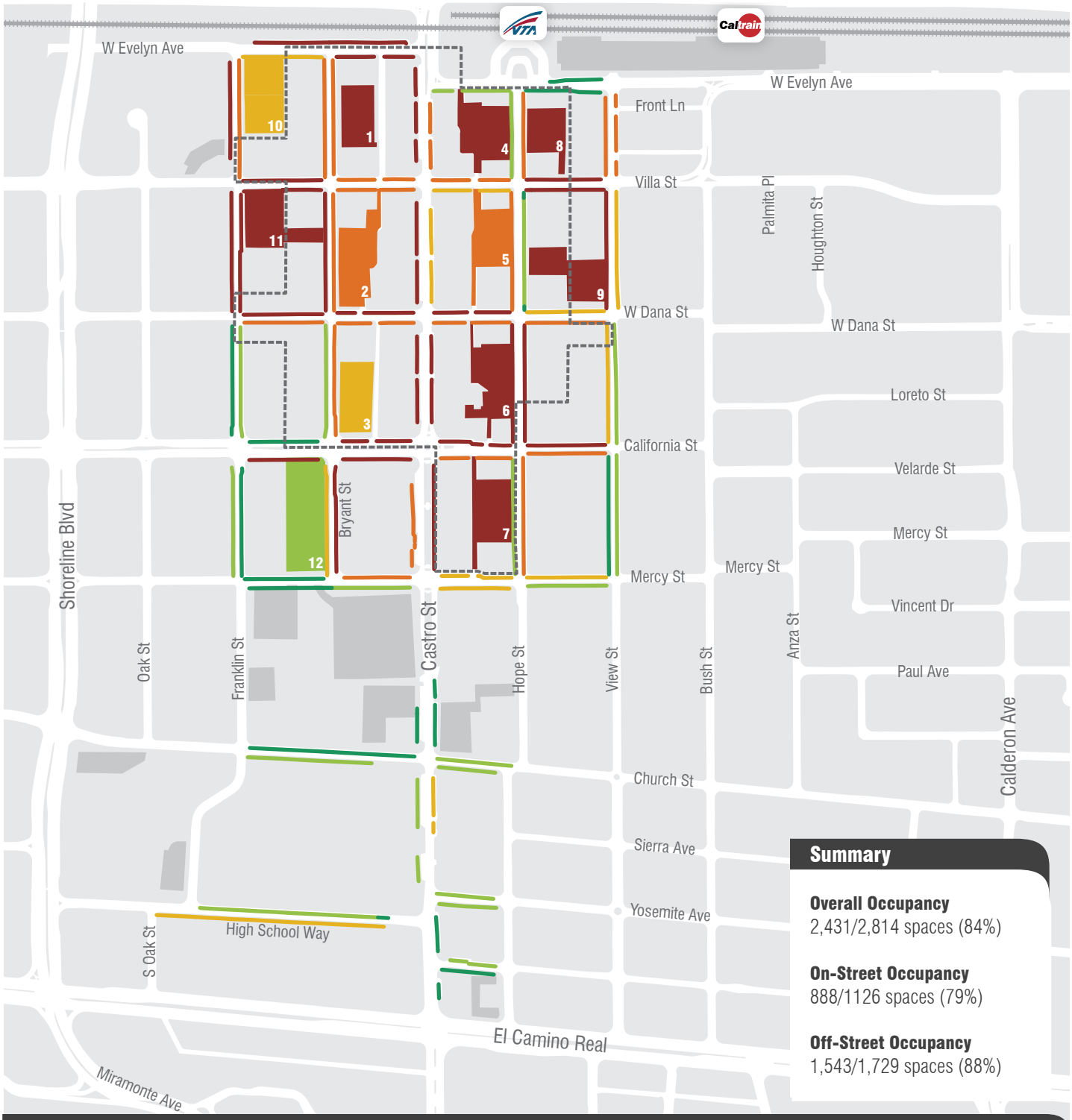


Figure 1.3.3 Evening Peak Hour Parking Occupancy, Friday 8:00PM - 9:00PM

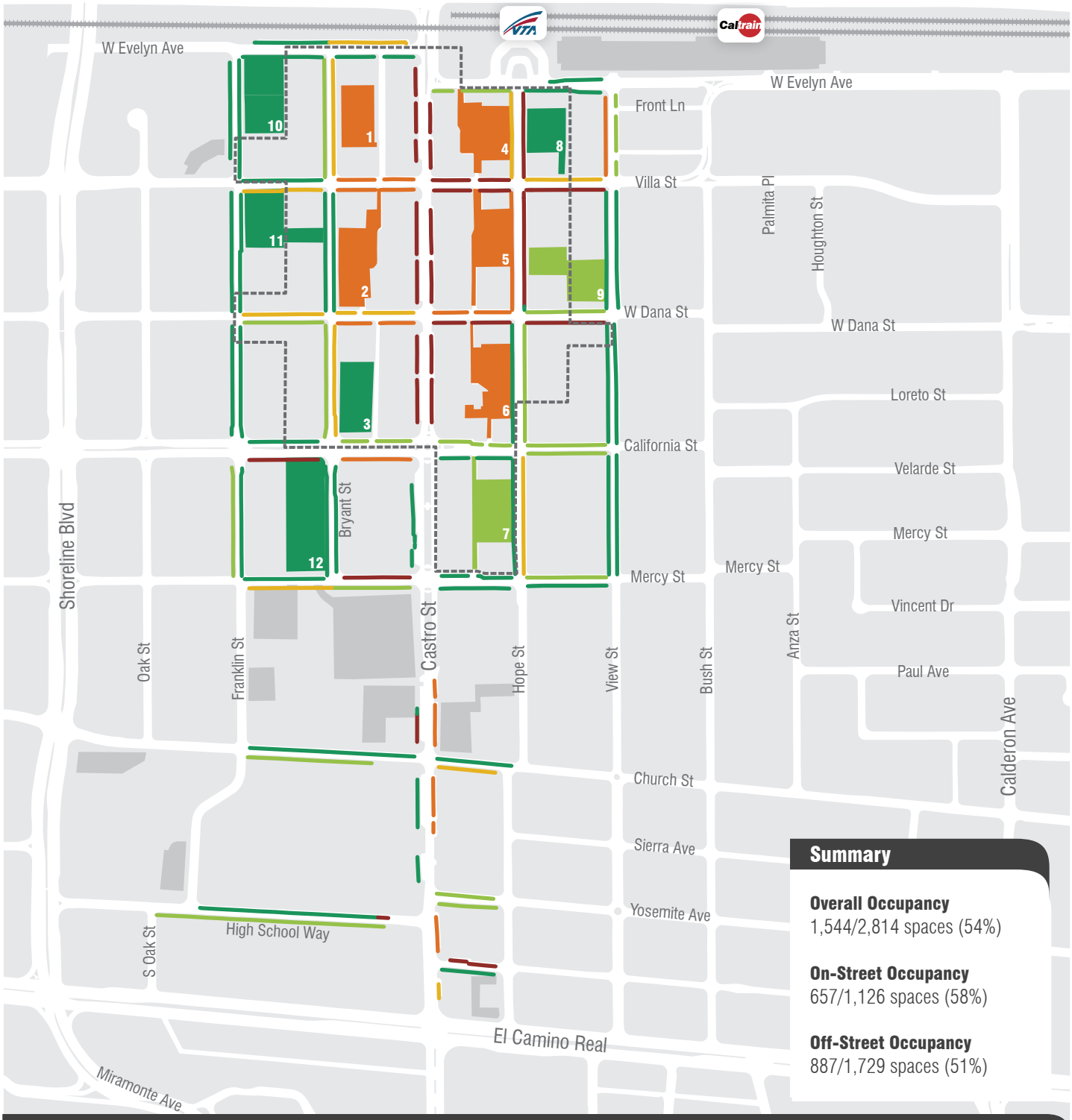


Figure 1.3.4 Weekend Daytime Peak Parking Occupancy, Saturday 1:00PM - 2:00PM

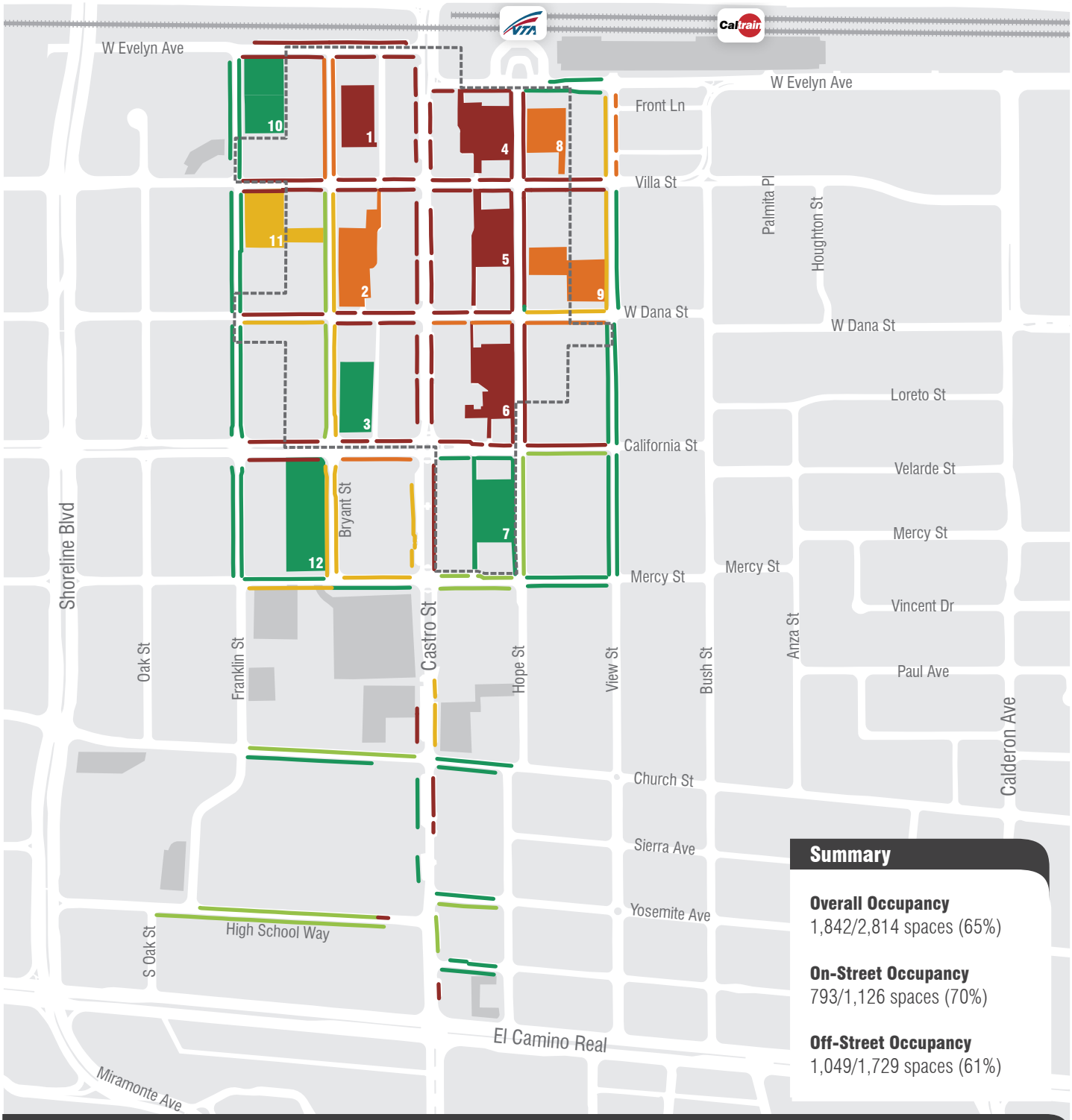


Figure 1.3.5 Weekend Evening Peak Parking Occupancy, Saturday 8:00PM - 9:00PM

Occupancy Levels throughout the Day

Peak hour parking conditions are important because they show the downtown parking supply at its most "stressed" and represent the time when an individual attempting to park would likely encounter the greatest amount of delay or frustration. It is also important, however, to consider how occupancies at individual parking facilities fluctuate throughout the day. The following sequence of tables presents hourly occupancy rates at all of the core downtown parking lots (Lots 2, and 4-13 as well as Parking Structures 1 and 3). To provide better visual definition, tables have been highlighted to indicate periods of low or high usage. Cells highlighted in green indicate hours when a facility was observed to be less than 50% full. Cells highlighted in pink represent times when a facility was over the 85% practical capacity level, and cells shaded in dark red indicate times when a facility was observed to have reached a critical occupancy level of 95% or higher.

Table 1.3.1: Summary of Overall Core Parking Occupancies by Day

	AM						PM									
From	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Space Type & Day To	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
On-street	**Percent Occupied Out of 1126 Total Spaces**															
Thursday	22%	26%	31%	36%	44%	52%	73%	69%	52%	48%	50%	54%	62%	70%	66%	58%
Friday	21%	25%	32%	35%	43%	52%	73%	70%	55%	50%	48%	52%	63%	73%	79%	77%
Saturday	NA	NA	22%	30%	38%	43%	50%	58%	55%	57%	53%	51%	53%	66%	70%	68%
On-Street 3-day Max	22%	26%	32%	36%	44%	52%	73%	70%	55%	57%	53%	54%	63%	73%	79%	77%
Off-street	**Percent Occupied Out of 1729 Total Spaces**															
Thursday	5%	7%	13%	18%	39%	49%	79%	78%	56%	44%	46%	48%	57%	72%	69%	58%
Friday	5%	6%	14%	23%	36%	48%	78%	80%	55%	49%	48%	53%	60%	74%	89%	80%
Saturday	NA	NA	8%	13%	20%	26%	46%	51%	50%	45%	42%	42%	48%	57%	61%	55%
On-Street 3-day Max	5%	7%	14%	23%	39%	49%	79%	80%	56%	49%	48%	53%	60%	74%	89%	80%
All Spaces	**Percent Occupied Out of 2855 Total Spaces**															
Thursday	12%	14%	20%	25%	41%	50%	77%	75%	55%	45%	47%	50%	59%	71%	68%	58%
Friday	11%	14%	21%	28%	39%	49%	76%	76%	55%	49%	48%	53%	61%	74%	85%	79%
Saturday	NA	NA	13%	19%	27%	33%	48%	54%	52%	49%	46%	46%	50%	61%	65%	60%
On-Street 3-day Max	12%	14%	21%	28%	41%	50%	77%	76%	55%	49%	48%	53%	61%	74%	85%	79%

Table 3.1 .1 presents the same data shown in Figure 1.3.1 but shaded as described above to indicate occupancy levels throughout the day and rearranged by parking type (on- and off-street) rather than by day. For each supply type a "3 day maximum" value is also shown indicating the highest occupancy level observed at any point during three days when data was collected. The three day maximum is thus intended to highlight the absolute peak occupancy observed for any particular time regardless of the day.

As the table indicates, the on- and off-street parking supplies in the downtown as a whole have plenty of available capacity in the morning, are somewhat fuller between the hours of 11:00 a.m. and 3:00 p.m.,

then empty out until around 5:00 p.m. when they begin to fill up again. It is also interesting to note that with the exception of the early morning, off-street parking is generally more occupied than on-street parking. This trend could be due to a number of factors but likely relates to the overall geography of the downtown parking supply. Most of the core downtown parking lots are centrally located mid-block between Castro Street and Bryant or Hope Streets and are very convenient to someone with a commercial destination on Castro Street. Meanwhile, there is a relatively small amount of on-street parking available on Castro Street itself and the bulk of on-street parking in the core downtown is located further away from the commercial center.

Tables 1.3.2, 1.3.3, and 1.3.4, present occupancy data by individual off-street facility for Thursday, Friday, Saturday, and a composite 3-day maximum. Table 1.3.2 for Thursday shows the same peaking pattern seen in the downtown parking supply as a whole, but also show that parking demand is unevenly distributed between different lots. Many off-street facilities, particularly Parking Structure 1, Lot 2, and Lots 4-10 are very heavily used and were observed to be at or over capacity for multi-hour stretches of the day. During the peak evening hours, Lots 4 and 8 were 100% full. Lot 11, 12 and the Parking Structure 3 were seldom at or near capacity, however, and Parking Structure 3 only reached a 41% occupancy level at its fullest.

Table 1.3.2: Off-Street Occupancies by Facility (Thursday)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Facility	Spaces	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Lot 1*	313	0%	1%	1%	5%	17%	30%	87%	94%	50%	36%	29%	36%	48%	91%	97%	82%
Lot 2	104	10%	19%	20%	37%	54%	69%	100%	100%	64%	52%	47%	47%	66%	69%	92%	88%
Lot 3*	401	0%	1%	2%	4%	12%	14%	35%	35%	19%	18%	20%	19%	23%	41%	35%	19%
Lot 4	88	7%	10%	17%	19%	31%	59%	89%	90%	78%	60%	76%	78%	100%	100%	99%	91%
Lot 5	94	2%	5%	7%	22%	47%	80%	94%	94%	85%	78%	88%	95%	96%	96%	93%	88%
Lot 6	98	0%	2%	5%	10%	28%	58%	98%	97%	71%	59%	67%	77%	94%	100%	94%	89%
Lot 7	94	4%	4%	26%	51%	74%	84%	99%	94%	86%	51%	47%	49%	71%	72%	56%	74%
Lot 8	61	28%	34%	41%	57%	67%	75%	97%	93%	87%	90%	77%	70%	79%	95%	100%	64%
Lot 9	90	2%	4%	11%	30%	64%	68%	94%	82%	76%	71%	68%	69%	82%	96%	96%	94%
Lot 10	127	13%	13%	49%	50%	100%	100%	99%	100%	89%	50%	83%	78%	79%	73%	42%	0%
Lot 11	99	10%	8%	10%	11%	17%	28%	70%	89%	44%	33%	32%	34%	44%	44%	71%	52%
Lot 12	160	11%	13%	18%	45%	66%	62%	94%	74%	56%	41%	39%	41%	39%	63%	44%	53%
Overall	**1729**	**5%**	**7%**	**13%**	**18%**	**39%**	**49%**	**79%**	**78%**	**56%**	**44%**	**46%**	**48%**	**57%**	**72%**	**69%**	**58%**

**Parking Structures*

Table 1.3.3 presents the same occupancy data for Friday and shows a similar pattern with an even stronger evening peak. The midday peak is similar to Thursday's but the off-street lots were observed to be considerably more occupied during evening hours with Parking Structure 1, Lot 4, Lot 6, Lot 7, Lot 8, and Lot 9 all reaching 100% occupancy levels for one or more hours. This intense level of utilization suggests that many downtown visitors are likely experiencing frustration and delay on Friday evenings as they try to park in off-street lots or structures and are unable to find a single vacant space. Despite

high occupancies near Castro Street, some of the more peripheral lots maintain low occupancies even during the peak hour of parking activity. Lots 10, 11, 13, and Parking Structure 3 all have substantial capacity available for much of Friday evening.

Table 1.3.3: Off-Street Occupancies by Facility (Friday)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Facility	Spaces	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Lot 1*	313	1%	2%	2%	5%	16%	27%	90%	91%	53%	36%	35%	43%	54%	100%	100%	98%
Lot 2	104	11%	13%	20%	36%	56%	63%	100%	100%	75%	62%	67%	58%	89%	94%	97%	77%
Lot 3*	401	0%	1%	2%	5%	13%	14%	33%	39%	25%	21%	20%	22%	31%	46%	72%	56%
Lot 4	88	6%	9%	10%	17%	35%	69%	90%	91%	86%	68%	86%	98%	100%	100%	100%	98%
Lot 5	94	3%	7%	11%	36%	73%	85%	91%	87%	89%	76%	77%	98%	98%	95%	95%	94%
Lot 6	98	1%	1%	3%	16%	45%	63%	97%	99%	61%	71%	66%	84%	96%	100%	100%	100%
Lot 7	94	2%	4%	20%	45%	57%	81%	98%	94%	68%	64%	76%	72%	73%	100%	100%	98%
Lot 8	61	21%	21%	28%	52%	61%	80%	93%	85%	84%	85%	80%	80%	95%	82%	100%	90%
Lot 9	90	1%	3%	23%	31%	54%	63%	100%	99%	72%	59%	47%	72%	89%	99%	100%	100%
Lot 10	127	6%	7%	31%	50%	66%	77%	83%	99%	80%	82%	71%	75%	59%	54%	83%	71%
Lot 11	99	12%	9%	14%	12%	21%	34%	74%	91%	57%	55%	38%	25%	42%	44%	99%	84%
Lot 12	160	14%	17%	53%	53%	49%	63%	95%	79%	34%	34%	40%	49%	34%	38%	62%	57%
Overall	1729	5%	6%	**14%**	**23%**	**36%**	**48%**	**78%**	**80%**	**55%**	**49%**	**48%**	**53%**	**60%**	**74%**	**89%**	**80%**

**Parking Structures*

<50% 50%-85% 85%-90 >95%

Table 1.3.4: Off-Street Occupancies by Facility (Saturday)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Facility	Spaces	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Lot 1	313	NA	NA	3%	5%	8%	16%	86%	93%	91%	79%	76%	80%	93%	97%	98%	96%
Lot 2	104	NA	NA	13%	30%	50%	56%	82%	94%	89%	85%	81%	78%	80%	93%	93%	86%
Lot 3	401	NA	NA	0%	1%	1%	1%	2%	3%	4%	3%	3%	3%	3%	4%	4%	3%
Lot 4	88	NA	NA	18%	25%	50%	78%	99%	93%	98%	76%	74%	72%	98%	98%	99%	99%
Lot 5	94	NA	NA	15%	28%	40%	57%	95%	95%	90%	86%	73%	81%	94%	96%	97%	91%
Lot 6	98	NA	NA	5%	15%	52%	70%	68%	90%	74%	84%	87%	71%	88%	91%	98%	97%
Lot 7	94	NA	NA	21%	38%	45%	57%	56%	68%	57%	41%	44%	48%	29%	40%	28%	18%
Lot 8	61	NA	NA	23%	28%	26%	26%	36%	51%	39%	36%	34%	28%	39%	95%	98%	62%
Lot 9	90	NA	NA	7%	14%	19%	21%	51%	53%	56%	50%	32%	33%	28%	79%	92%	78%
Lot 10	127	NA	NA	9%	9%	12%	13%	12%	14%	17%	14%	13%	10%	13%	20%	23%	17%
Lot 11	99	NA	NA	11%	12%	12%	16%	17%	25%	31%	27%	22%	29%	42%	51%	80%	59%
Lot 12	160	NA	NA	6%	8%	16%	19%	23%	25%	32%	29%	32%	31%	33%	41%	48%	51%
Overall	1729	NA	NA	**8%**	**13%**	**20%**	**26%**	**46%**	**51%**	**50%**	**45%**	**42%**	**42%**	**48%**	**57%**	**61%**	**55%**

**Parking Structures*

<50% 50%-85% 85%-90 >95%

Table 1.3.4 presents off-street occupancy data for Saturday. Saturday data is notable in part because occupancies are substantially lower across most facilities for most of the day, but also because certain facilities continue to display high rates of utilization comparable to observed weekday levels of demand. Thus a driver attempting to park in Parking Structure 1, Lot 4, Lot 5, or Lot 6 on a Saturday might be frustrated even though there would likely be ample parking available elsewhere in the downtown. Parking Structure 3 was essentially empty on Saturday, not even achieving a 5% utilization rate.

Finally, Table 1.3.5 displays the overall, 3-day maximum occupancy values for all off-street lots. Perhaps most notably this table shows that over three days of observation and in spite of very high surrounding occupancy levels, Parking Structure 3 never reached its practical capacity. It is also important to note that time restrictions do not seem to have had a strong bearing on occupancy levels. With the exception of Lots 10 and 11, all of the downtown's off-street lots are signed as 2-hour restricted parking between 8:00 a.m. and 5:00 p.m. on weekdays. Lot 10 is unrestricted (although nominally signed for Caltrain overflow parking before 10:00am) and Lot 11 is signed for 3-hour parking but neither facility demonstrates an elevated rate of demand relative to other off-street lots.

Table 1.3.5: Off-Street Occupancies by Facility (3-Day Maximum)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Facility	Spaces	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Lot 1*	313	1%	2%	3%	5%	17%	30%	90%	94%	91%	79%	76%	80%	93%	100%	100%	98%
Lot 2	104	11%	19%	20%	37%	56%	69%	100%	100%	89%	85%	81%	78%	89%	94%	97%	88%
Lot 3*	401	0%	1%	2%	5%	13%	14%	35%	39%	25%	21%	20%	22%	31%	46%	72%	56%
Lot 4	88	7%	10%	18%	25%	50%	78%	99%	93%	98%	76%	86%	98%	100%	100%	100%	99%
Lot 5	94	3%	7%	15%	36%	73%	85%	95%	95%	90%	86%	88%	98%	98%	96%	97%	94%
Lot 6	98	1%	2%	5%	16%	52%	70%	98%	99%	74%	84%	87%	84%	96%	100%	100%	100%
Lot 7	94	4%	4%	26%	51%	74%	84%	99%	94%	86%	64%	76%	72%	73%	100%	100%	98%
Lot 8	61	28%	34%	41%	57%	67%	80%	97%	93%	87%	90%	80%	80%	95%	95%	100%	90%
Lot 9	90	2%	4%	23%	31%	64%	68%	100%	99%	76%	71%	68%	72%	89%	99%	100%	100%
Lot 10	127	13%	13%	49%	50%	100%	100%	99%	100%	89%	82%	83%	78%	79%	73%	83%	71%
Lot 11	99	12%	9%	14%	12%	21%	34%	74%	91%	57%	55%	38%	34%	44%	51%	99%	84%
Lot 12	160	14%	17%	53%	53%	66%	63%	95%	79%	56%	41%	40%	49%	39%	63%	62%	57%
Overall	1729	**5%**	**7%**	**14%**	**23%**	**39%**	**49%**	**79%**	**80%**	**56%**	**49%**	**48%**	**53%**	**60%**	**74%**	**89%**	**80%**

**Parking Structures*

Tables 1.3.6 through 1.3.9 display comparable data for on-street facilities in the downtown core organized by time restriction category. Time restrictions include unrestricted spaces, 2-hour spaces, 1-hours spaces, and under 1-hour spaces (predominantly signed as "24 minute"). The "Other Restrictions" category shown in the tables is a grouping of handicap spaces, temporary or part-day loading zones, and the variety of other on-street spaces that have some kind of signed restriction impacting the ability of drivers to use them for parking. Figures 1.2.2 and 1.2.3 in the preceding section show the locations of on-street restrictions in detail.

As discussed earlier, observed on-street occupancy levels were generally lower than corresponding off-street parking occupancies. At first glance this is somewhat surprising, particularly given that Mountain View's off-street time restrictions are not significantly more permissive than its on-street restrictions. Again, the higher demand levels in the downtown's off-street lots (particularly those close to Castro Street) may relate to their convenient positioning and high visibility. Similarly, parking along Castro Street itself is highly limited and it is possible that drivers who do not immediately find parking there may quickly divert to a surface lot rather than continuing to search for on-street parking.

Table 1.3.6: On-Street Occupancies by Restriction Category (Thursday)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Space Type	Spaces	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Unrestricted	346	36%	38%	39%	41%	52%	59%	71%	67%	59%	55%	54%	55%	55%	58%	56%	49%
2-hour	580	17%	21%	26%	33%	36%	45%	75%	71%	47%	43%	46%	50%	64%	76%	74%	67%
1-hour	128	6%	19%	30%	42%	59%	73%	86%	84%	67%	70%	63%	80%	79%	86%	71%	61%
< 1 hour	41	15%	22%	37%	37%	63%	56%	76%	54%	51%	34%	49%	49%	68%	78%	63%	29%
Subtotal	**1095**	**22%**	**26%**	**31%**	**37%**	**45%**	**53%**	**75%**	**71%**	**54%**	**49%**	**51%**	**55%**	**63%**	**71%**	**67%**	**59%**
Other restrictions	31	22%	19%	12%	2%	5%	5%	4%	14%	14%	11%	14%	21%	21%	20%	14%	8%
All Spaces	**1126**	**22%**	**26%**	**31%**	**36%**	**44%**	**52%**	**73%**	**69%**	**52%**	**48%**	**50%**	**54%**	**62%**	**70%**	**66%**	**58%**

Table 1.3.7: On-Street Occupancies by Restriction Category (Friday)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Space Type	Spaces	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Unrestricted	346	39%	41%	45%	47%	58%	65%	70%	67%	60%	60%	55%	56%	56%	62%	72%	72%
2-hour	580	14%	18%	23%	28%	32%	42%	73%	74%	49%	42%	42%	47%	69%	81%	86%	81%
1-hour	128	12%	23%	45%	45%	58%	70%	96%	82%	81%	73%	69%	76%	81%	79%	76%	78%
< 1 hour	41	17%	22%	24%	39%	44%	59%	73%	68%	73%	51%	49%	49%	39%	73%	85%	83%
Subtotal	**1095**	**22%**	**26%**	**33%**	**36%**	**44%**	**53%**	**75%**	**72%**	**57%**	**52%**	**49%**	**53%**	**65%**	**75%**	**81%**	**78%**
Other restrictions	31	9%	9%	0%	0%	0%	2%	1%	1%	1%	2%	11%	18%	8%	14%	20%	23%
All Spaces	**1126**	**21%**	**25%**	**32%**	**35%**	**43%**	**52%**	**73%**	**70%**	**55%**	**50%**	**48%**	**52%**	**63%**	**73%**	**79%**	**77%**

Tables 1.3.6 and 1.3.7 show the same general peaking patterns observed in both the downtown as a whole and in the off-street facilities but the peaks (and troughs) are generally less pronounced than those observed in the core off-street lots and structures. A sharp midday peak in the limited number of 1-hour on-street spaces (primarily along Castro Street) is noticeable on both Thursday and Friday and likely corresponds to lunch hour customers.

Table 1.3.8: On-Street Occupancies by Restriction Category (Saturday)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Space Type	Spaces	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Unrestricted	346	NA	NA	33%	34%	33%	41%	37%	45%	47%	49%	48%	49%	44%	49%	51%	53%
2-hour	580	NA	NA	16%	25%	34%	38%	52%	59%	56%	60%	51%	49%	56%	74%	80%	75%
1-hour	128	NA	NA	28%	44%	71%	70%	81%	92%	83%	71%	73%	73%	80%	91%	84%	87%
< 1 hour	41	NA	NA	7%	37%	39%	49%	44%	73%	54%	44%	49%	49%	34%	51%	66%	54%
Subtotal	**1095**	NA	NA	**22%**	**31%**	**38%**	**43%**	**50%**	**59%**	**56%**	**57%**	**53%**	**52%**	**54%**	**67%**	**71%**	**69%**
Other restrictions	31	NA	NA	3%	15%	44%	24%	47%	21%	8%	34%	43%	27%	34%	40%	56%	49%
All Spaces	**1126**	NA	NA	**22%**	**30%**	**39%**	**43%**	**50%**	**58%**	**55%**	**56%**	**53%**	**51%**	**54%**	**66%**	**70%**	**68%**

<50% 50%-85% 85%-90 >95%

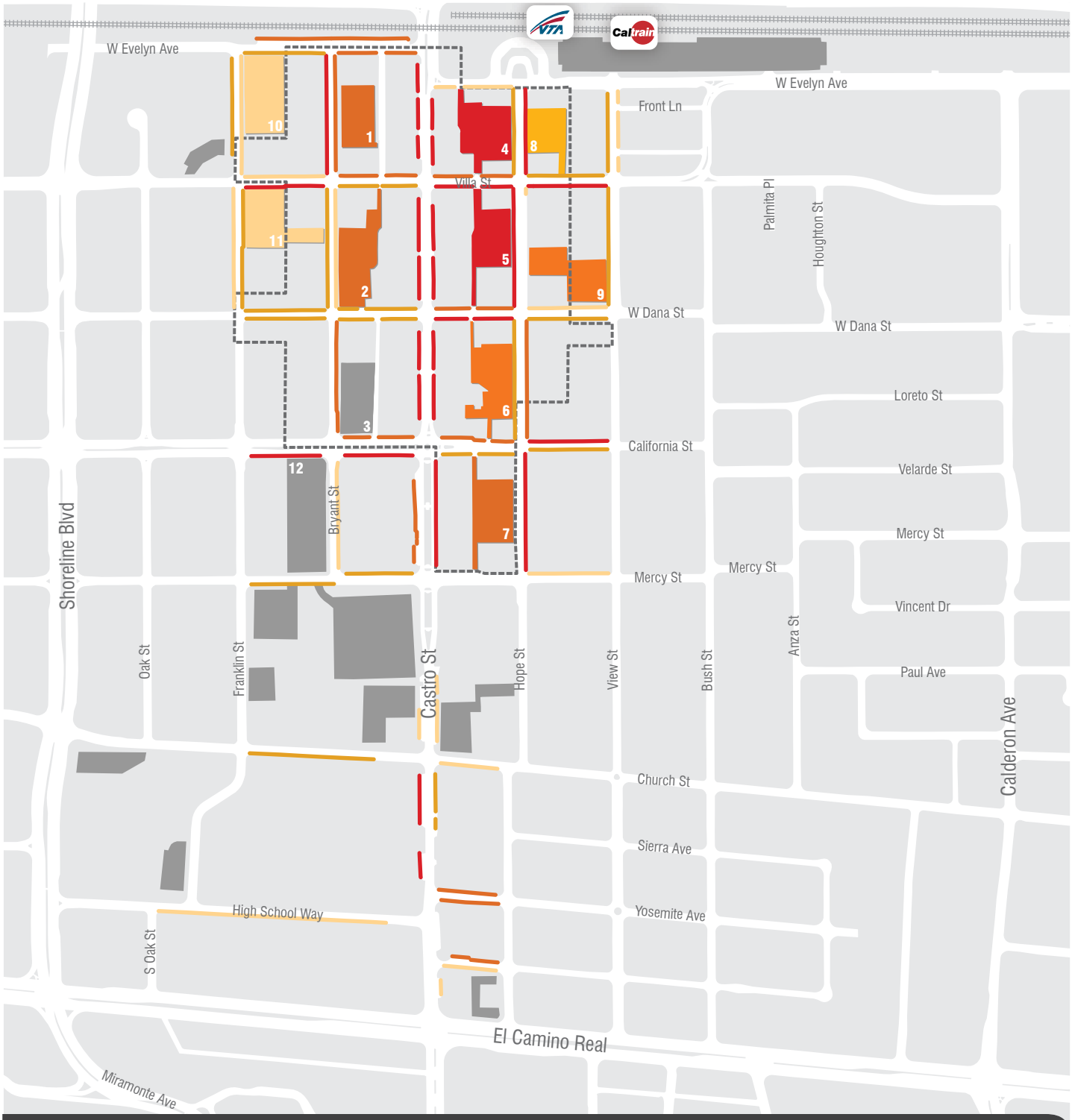
Table 1.3.8 displays on-street occupancy data observed on Saturday. The data is notable in that it shows levels of Saturday on-street demand comparable and in some cases higher than those observed on the weekdays. This is particularly true of the 1-hour parking along Castro Street. Much of the overall parking demand deficit observed on Saturday relative to the weekdays thus relates to discrepancies in occupancy levels in a few off-street lots rather than the downtown as a whole.

Table 1.3.9: On-Street Occupancies by Restriction Category (Saturday)

		AM						PM									
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Facility		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Unrestricted	346	39%	41%	45%	47%	58%	65%	71%	67%	60%	60%	55%	56%	56%	62%	72%	72%
2-hour	580	17%	21%	26%	33%	36%	45%	75%	74%	56%	60%	51%	50%	69%	81%	86%	81%
1-hour	128	12%	23%	45%	45%	71%	73%	96%	92%	83%	73%	73%	80%	81%	91%	84%	87%
< 1 hour	41	17%	22%	37%	39%	63%	59%	76%	73%	73%	51%	49%	49%	68%	78%	85%	83%
Subtotal	**1095**	22%	26%	**33%**	**37%**	**45%**	**53%**	**75%**	**72%**	**57%**	**57%**	**53%**	**55%**	**65%**	**75%**	**81%**	**78%**
Other restrictions	31	22%	19%	12%	15%	44%	24%	47%	21%	14%	34%	43%	27%	34%	40%	56%	49%
All Spaces	**1126**	22%	26%	**32%**	**36%**	**44%**	**52%**	**73%**	**70%**	**55%**	**56%**	**53%**	**54%**	**63%**	**73%**	**79%**	**77%**

<50% 50%-85% 85%-90 >95%

Finally, Table 1.3.9 presents the three day maximum occupancy levels for on-street parking. It is worth noting, again, that within the core downtown area, parking occupancies did not seem to be substantially impacted by time restrictions. Blockfaces that were unrestricted or had 2-hour time restrictions did not appear to be any more heavily occupied or "in demand" than those with shorter or more restrictive limits. This is a positive finding and likely results from the City of Mountain View's current system of clustering shorter time restrictions (such as the 1-hour parking along Castro Street) near the center of commercial activity while allowing more relaxed parking restrictions (2-hour and unrestricted spaces) further away from the center of the downtown.



Legend

Hours per day facility at or above capacity (85% Occupied)

- 0 hours
- 1 - 2 hours
- 3 - 4 hours
- 5 - 6 hours
- 7 hours and up

- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 1.3.6 Total Hours At or Above Capacity-Core (Friday)

Figure 1.3.6 on the preceding page presents a different analysis of the core occupancy data that provides information on parking "hot spots" or areas where parking demand is sustained at high levels throughout the entire day. Figure 1.3.6 was generated for Friday, the day that was observed to have the overall highest levels of parking demand. In the figure, lots and blockfaces are colored based on the number of hours during the day that each was observed to be at or above its practical capacity (85% full). As the figure suggests, much of the parking along and adjacent to Castro Street was observed to be impacted throughout the entire day. Similarly, Lots 4 and 6 had sustained high occupancies as did Parking Structure 1, and Lots 2 and 7. The figure also shows that the temporary lots (Lots 10, 11, and 12) along the western edge of the downtown were generally less impacted throughout the day than the more central, permanent lots. The map also shows that Parking Structure 3 was never full at any point during the day.

Parking in Alleys

At the City's request, the number of cars parked in Wild Cherry Lane between Dana and California Streets and between West Evelyn Avenue and Villa Streets were also counted on Thursday, Friday, and Saturday. As discussed in section 1.2, these alleys are generally designated as commercial loading zones but much of the parking striping and signage has deteriorated or is difficult to understand. As a result, a sizeable number of cars park in both alleys throughout the day as shown in Table 1.3.10. Legal loading zones and parking areas in the alleys are not well marked and in many cases vehicles were observed to double park or park in front of store or restaurant entryways. Due to the unusual arrangement of the alleys and the deterioration of painted markings it is impossible to accurately determine a "capacity" for either of the alleys and calculate corresponding occupancy percentages. Instead, the number of cars has been presented by hour.

Table 1.3.10: Vehicles Parked in Alleys

	AM						PM									
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Alley Parking	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Wild Cherry Lane between Dana and California Streets																
Thursday	0	1	2	3	4	5	4	5	6	6	4	5	4	3	2	2
Friday	0	1	2	2	2	4	2	5	3	5	3	4	5	5	4	7
Saturday	NA	NA	0	0	3	3	5	0	6	5	5	7	7	26	21	29
Wild Cherry Lane between W. Evelyn Avenue & Villa Street																
Thursday	1	1	3	4	9	13	12	13	10	11	8	9	13	14	17	15
Friday	0	0	2	3	6	10	13	10	11	6	7	6	11	14	13	13
Saturday	NA	NA	3	4	5	5	6	6	7	7	7	14	25	12	16	18

Table 1.3.10 suggests that parking patterns in the alleys (particularly in the segment between W. Evelyn Avenue and Villa Street) generally follow the same overall utilization pattern as the downtown as a whole. There is no clear explanation for the very high number of cars parked in Wild Cherry Lane on Saturday evening but it can be conjectured that the spike in occupancy was likely related to a specific event at a nearby restaurant or commercial venue.

Parking duration

While occupancy data is a key metric describing how parking in the downtown is used, occupancy percentages provide only a series of snapshots of how "full" different parking facilities are at different points in time. To truly understand current parking usage in the downtown, it is equally important to develop an insight into how long parkers stay, how employee permits are used, and to what extent "reparking" or "shuffling" of cars may be occurring. Because license plate data was collected on an hourly basis for Thursday and Friday, it is possible to track these metrics in a variety of ways. Most of the following duration data is presented in terms of the observed distribution of "parking events" by length. At the end of the section an analysis is conducted to group observed parking events into profiles such as "customers" and "employees."

Over the 16 hours of data collection conducted each day, a total of 9,512 unique "parking events" were observed in the core downtown on Thursday and 10,364 were observed on Friday. A parking event equates to every instance where a unique license plate was observed to be parked in a particular lot, garage, or blockface. The total number of parking events is not a terribly meaningful number in and of itself, but these "events" are the basis for much of the following analysis related to how long vehicles remained park and how they moved around the downtown. Table 1.3.11, below, summarizes these parking events based on their observed length in hours. The table shows that the majority of all parking events (over 50% on both days) lasted one hour or less. The average length of a typical parking event, however, was 2.3 hours on both days (the average takes into account both the large number of short term events as well as the smaller number of long events).

Table 1.3.11: Core Area Weekday Parking Duration by Percentage

		Parking Event Length (Hours)										
Parking Day & Type	Total Events	1	2	3	4	5	6	7	8	9	10 +	Avg event length
On-street												
Thursday	4,101	59%	19%	8%	3%	2%	2%	1%	1%	1%	3%	2.3 hrs
Friday	4,349	54%	25%	7%	5%	2%	1%	1%	1%	1%	3%	2.2 hrs
Off-street												
Thursday	5,411	56%	18%	8%	4%	3%	3%	2%	2%	2%	2%	2.3 hrs
Friday	6,015	54%	23%	6%	4%	3%	2%	2%	2%	1%	2%	2.3 hrs
Overall												
Thursday	9,512	57%	19%	8%	4%	3%	2%	2%	2%	1%	3%	2.3 hrs
Friday	10,364	54%	24%	7%	4%	3%	2%	2%	2%	1%	2%	2.3 hrs

Table 1.3.12 presents the same information as Table 1.3.11 using numbers rather than percentages. The numbers are useful because they provide a more absolute sense of the number of cars that are actively parking in the downtown. Thus, well over 2,000 events lasting one hour or less were observed on both days whereas a few hundred all day events lasting 7, 8, 9, or 10 or more hours were observed.

Table 1.3.12: Core Area Weekday Parking Duration by Number

Parking Day & Type	Total Events	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	9 hr	10 + hr	Avg Space-Hrs
On-street												
Thursday	4101	2410	773	343	137	88	73	53	46	44	134	2.3 hrs
Friday	4349	2341	1085	309	209	94	60	44	50	32	125	2.2 hrs
Off-street												
Thursday	5411	3014	996	431	224	178	140	125	104	85	114	2.3 hrs
Friday	6015	3268	1360	385	239	195	120	129	113	77	129	2.3 hrs
Overall												
Thursday	9512	5424	1769	774	361	266	213	178	150	129	248	2.3 hrs
Friday	10364	5609	2445	694	448	289	180	173	163	109	254	2.3 hrs

Table 1.3.13 and 1.3,14 present data on the duration of parking events observed at individual off-street facilities in the core downtown. For the sake of brevity, data is presented for Friday only. Comparable data by facility tabulated for Thursday yielded similar results.

Table 1.3.13: Friday Parking Duration in Off-Street Facilities

Facility Name	Total Events	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	9 hr	10 + hr	Avg Space-Hrs
Parking Structure (Lot 1)	1111	56%	22%	7%	4%	3%	2%	2%	1%	1%	1%	2.1
Lot 2	452	61%	11%	4%	3%	4%	2%	4%	2%	2%	6%	2.8
Parking Structure (Lot 3)	285	44%	31%	6%	5%	3%	2%	4%	2%	1%	3%	2.5
Lot 4	638	63%	19%	6%	3%	2%	3%	2%	1%	0%	1%	1.9
Lot 5	443	53%	25%	6%	5%	3%	1%	1%	2%	1%	3%	2.3
Lot 6	837	55%	28%	7%	4%	2%	1%	1%	1%	1%	0%	1.9
Lot 7	342	49%	23%	6%	4%	4%	2%	1%	2%	2%	5%	2.7
Lot 8	459	51%	25%	7%	4%	4%	5%	1%	2%	1%	1%	2.3
Lot 9	426	56%	19%	7%	4%	4%	1%	3%	2%	2%	2%	2.3
Lot 10	418	52%	26%	5%	4%	2%	1%	2%	2%	3%	2%	2.4
Lot 11	227	41%	19%	11%	5%	7%	2%	5%	5%	3%	3%	3.1
Lot 12	377	51%	22%	7%	4%	5%	2%	2%	3%	1%	2%	2.4
All Core Area Public Parking	**6015**	**54%**	**23%**	**6%**	**4%**	**3%**	**2%**	**2%**	**2%**	**1%**	**2%**	**2.3**

Table 1.3.13 shows parking event duration data for all hours of data collection on Friday (6:00 a.m.-10:00 p.m.). This includes both periods when time restrictions were enforced as well as times before and after restriction hours. The data shows that all lots were dominated by vehicles parking for one hour or less. With the exception of Lot 2, however, all lots also had a substantial number of 2 hour parkers. Lot 11 also had a number of three hour parkers. The overall average number of space hours per event for most lots was between 2 and 3 hours. This metric provides a general sense of parking duration but it should be used cautiously since it is an average of a large number of short events that is

tilted heavily by the relatively small number of all day parkers staying for long stretches of time. Parking structure 3 is relatively underutilized overall but has somewhat higher rates of long term parking than the other downtown lot. This may in part be because the location of the parking structure and its ample availability of parking is better known to employees or because visitors who are coming downtown for longer stays are more willing to drive into a garage and are less concerned about trying to find parking immediately next to their destination.

Table 1.3.14 shows the same data as table 1.3.13 but only for parking events that started and ended during enforcement hours (8:00 a.m. to 5:00 p.m.). Not surprisingly, the overall average event length is shorter for all lots (except, interestingly, Lot 11) and fewer long term parking events are evident. Lot 11 is the only Lot with a 3-hour time restriction during enforcement hours and it may be that individuals needing to park for longer periods of time seek out this specific lot and thus drive up the average length of stay during enforcement hours. It is surprising, however, that Lot 10, which is unrestricted and is nominally reserved for commuter parking, was observed to have a relatively low rate of long term parking comparable to that observed at other downtown facilities. It is also important to note that the data in this table suggest a fairly high rate of parking time limit violations. Lots 2, 4, and 6 are all restricted to 2-hour parking and do not allow employee permits. Despite these restrictions, between 10% and 24% of parking events occurring on these lots lasted 3 hours or longer.

Table 1.3.14: Friday Parking Duration in Off-Street Facilities- Enforcement Hours Only

Facility Name	Total Events	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	9 +hrs	Avg Space-Hrs
Parking Structure (Lot 1)	452	60%	27%	4%	3%	2%	2%	1%	1%	0%	1.8
Lot 2	154	68%	8%	4%	3%	5%	2%	5%	3%	2%	2.2
Parking Structure (Lot 3)	120	59%	18%	6%	4%	4%	2%	6%	1%	0%	2.1
Lot 4	262	71%	19%	4%	2%	0%	2%	2%	0%	0%	1.6
Lot 5	231	68%	18%	5%	3%	4%	0%	0%	1%	0%	1.7
Lot 6	316	65%	19%	4%	3%	1%	2%	2%	2%	1%	1.9
Lot 7	184	57%	23%	4%	4%	1%	2%	7%	3%	0%	2.2
Lot 8	277	59%	27%	4%	3%	2%	1%	2%	2%	0%	1.8
Lot 9	200	65%	19%	7%	2%	2%	2%	3%	2%	1%	1.9
Lot 10	170	62%	21%	5%	2%	1%	0%	4%	2%	2%	2.0
Lot 11	86	48%	15%	8%	2%	2%	0%	12%	10%	2%	3.1
Lot 12	134	58%	20%	5%	2%	1%	1%	5%	6%	0%	2.2
All Core Area Public Parking	**2586**	**62%**	**21%**	**5%**	**3%**	**2%**	**1%**	**3%**	**2%**	**1%**	**1.9**

Table 1.3.15: Friday Parking Duration in On-Street Facilities by Category

Facility type	Total Events	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	9 hr	10 + hr	Avg Space-Hrs
Under 1 hour	182	56%	13%	4%	3%	1%	1%	1%	3%	0%	1%	1.6
1 hour	884	72%	16%	5%	2%	1%	0%	0%	0%	0%	0%	1.5
2 hour	2334	57%	20%	8%	3%	2%	2%	1%	1%	1%	2%	2.0
Unrestricted	846	37%	16%	12%	6%	4%	3%	3%	2%	3%	9%	3.8
Other	103	19%	7%	5%	2%	1%	0%	0%	0%	0%	1%	1.3
Total	**4349**	**55%**	**18%**	**8%**	**3%**	**2%**	**2%**	**1%**	**1%**	**1%**	**3%**	**2.2**

Table 1.3.15 and 1.3.16 present comparable Friday duration data for on-street parking by restriction category. Table 1.3.15 presents event data for the full 16 hours of data collection. In general the range of parking durations observed on-street are considerably less uniform than those observed in the lots. On-street parking events were significantly shorter for some restriction categories including 1-hour and under 1-hour spaces and much longer in unrestricted spaces. These trends are further visible in Table 1.3.16 where data is confined to parking events occurring during enforcement hours only.

Table 1.3.16: Parking Duration in On-Street Facilities by Category (Enforcement Hours Only)

Facility type	Total Events	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	9+ hrs	Avg Space-Hrs
Under 1 hour	118	86%	5%	4%	1%	2%	2%	0%	0%	0%	1.3
1 hour	127	80%	13%	3%	0%	1%	1%	2%	0%	0%	1.4
2 hour	1143	63%	25%	6%	3%	1%	1%	0%	1%	0%	1.6
Unrestricted	292	42%	21%	11%	8%	5%	4%	4%	3%	2%	2.7
Other	6	83%	17%	0%	0%	0%	0%	0%	0%	0%	1.2
Total	**1686**	**62%**	**22%**	**6%**	**3%**	**2%**	**1%**	**1%**	**1%**	**1%**	**1.8**

Table 1.3.16 shows parking event durations roughly conforming to restriction categories. It should be noted, however, that all restriction categories also show a substantial rate of violations. 14% of events at under 1 hour spaces, 20% of events at 1-hour spaces, and 12% of events at 2-hour spaces violated posted time limits. These are high violation rates and suggest the need to revisit on-street enforcement practices as part of a comprehensive parking management strategy.

Employee Permits

Employee permits were also observed as part of the Task 1 study of parking duration. Businesses and employees located within the Parking Maintenance Assessment District (PMAD) are eligible to purchase permits that allow them to park for extended periods of time in certain downtown facilities. The City's website specifies that permit holders are eligible for extended parking on the top floors of the two parking structures (Structures 1 and 3) as well as Lots 6-9 and 11. Lot 5, however, also has posted signage specifying that permit holders are eligible to use the facility. Overall, there are 884 spaces in the downtown where permit holders are eligible to park. Supplemental occupancy and permit data was collected on a Thursday in October at all of the facilities allowing permits (including Lot 5) to verify trends and fill in gaps in the original data collection. This data was ultimately used for the permit

analysis and is presented below. Table 1.3.17 compares enforcement hour parking duration data for permit and non-permit vehicles for facilities where permits are allowed.

Table 1.3.18: Employee Permit User Duration (Thursday)

Vehicle Type	Total	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	9 +hr	Avg
All Vehicles	2000	61%	22%	5%	3%	2%	1%	3%	2%	0%	1.93 hrs
Permit Vehicles	374	34%	9%	6%	9%	6%	16%	7%	9%	4%	3.95 hrs
Non-Permit Vehicles	1626	67%	25%	4%	1%	0%	0%	1%	0%	0%	1.52 hrs

As expected, Table 1.3.17 shows that permit holders park for substantially longer than non-permit holders at the same facility. Although the largest proportion of permit holders still only parked for one hour or less, a much higher number of permit holders were found parking for 4 or more hours.

Table 1.3.18: Employee Permit Usage (Thursday)

			8:00am-9:00am			12:00pm-1:00pm			4:00pm-5:00pm		
Facility	Total Spaces	Permit Spaces	overall occ	Cars w permits	permit occ	overall occ	Cars w permits	permit occ	overall occ	Cars w permits	permit occ
Parking Structure 1	313	160	1%	3	1%	87%	22	7%	29%	16	5%
Parking Structure 3	401	146	2%	2	0%	35%	33	8%	20%	40	10%
Lot 5	94	89	22%	6	6%	98%	12	13%	96%	16	17%
Lot 6	98	94	3%	1	1%	98%	8	8%	61%	7	7%
Lot 7	94	90	27%	13	14%	100%	45	48%	65%	36	38%
Lot 8	61	58	43%	7	11%	98%	34	56%	89%	35	57%
Lot 9	90	86	19%	6	7%	94%	18	20%	89%	17	19%
Lot 11	99	95	7%	0	0%	84%	0	0%	55%	0	0%
Lot 12	160	155	21%	5	3%	94%	13	8%	58%	10	6%

Overall Occupancy <50% 50%-85% 85%-90% >95%

Permit holders account for more than 50% of Lot's occupancy

Table 1.3.18 compares permit usage with overall observed occupancy rates at facilities allowing employee permits. For each facility where permits are allowed, an overall occupancy rate, the number of cars displaying permits, and the percentage of the lot's capacity taken up by "permit cars" is reported. Table 1.3.18 indicates that with the exception of Lot 8, and to a lesser degree Lot 7, permit users are fairly well distributed and do not account for an overwhelming or even significant proportion of cars observed in each lot. This data indicates that, with the possible exception of Lot 8, the high occupancy rates observed in the downtown's off-street parking are not driven by employee permit usage.

Reparking

License plate data was also used to track instances of reparking. In a general sense, reparking was defined to have occurred whenever a license plate was observed to have moved from one parking lot or

blockface to another. However, since the goal of tracking reparking was to develop a sense of whether downtown visitors and employees were moving their cars to avoid time restrictions, "reparking events" were only counted if they conformed to within a fairly strict set of conditions. Thus the "reparking events" discussed below all occurred during enforcement hours, did not exhibit significant gaps of time between each observation of the same license plate, and were all made up of short "contributing" events (ie the reparking events shown here involve vehicles that changed location after one or two hours, suggesting that they may have been constrained by a time limit).

Table 1.3.19: Reparking Events by Number of Reparking Movements

Day	Contributing Events	Combined Events	Number of Time Reparking				
			1	2	3	4	5
Thursday	1134	530	462	62	6	0	0
Friday	1301	600	521	61	14	4	0

In Table 1.3.19, the number of "contributing events" refers to the number of individual parking events or actions made by a single vehicle as it moved from space to space around the downtown. The number of "combined events" refers to the number of parking events that were observed if multiple "reparkings" by the same vehicle are instead treated as a single event. Thus one car that was observed to have parked in three different lots over the course of the day would typically be described as three individual parking events but here has been categorized as one combined event made up of three contributing events. As Table 1.13.19 shows, between 500 and 600 reparking cars were observed during enforcement hours on Thursday and Friday. Most of these cars reparked one time, but a sizeable number reparked twice and a handful reparked 3 or more times.

Table 1.3.20: Reparking Events by Length

Reparking	Total Events	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	9 hr
Thursday										
Contributing Events	**1134**	683	245	134	72	0	0	0	0	0
Combined Events	**530**	0	175	131	94	71	38	12	5	3
Friday										
Contributing Events	**1301**	769	331	117	84	0	0	0	0	0
Combined Events	**600**	0	189	176	90	74	37	17	13	3

Table 1.3.20 shows how a smaller set of "combined" reparking events were built out of individual shorter contributing events. Thus on Thursday 1,134 contributing events ranging from 1 hour to 4 hours in length were recategorized as 530 combined events ranging from 2 hours to 7 hours in length. The goal of this exercise is to develop a more accurate estimate of the true demand for long term parking in the downtown, whether for employees trying to park all day or for visitors and customer who need to stay longer than 1 or 2 hours. Table 1.3.21 takes the original parking event duration data presented in Table 1.3.12 and adjusts the original numbers to account for the observed reparkings activity.

Table 1.3.21: Weekday Parking Duration with Reparking Adjustment

Parking Day & Type	Total Events	Parking Event Length (Hours) 1	2	3	4	5	6	7	8	9	10 +	Avg event length
Thursday												
Original Events	9,512	5424	1769	774	361	266	213	178	150	129	248	2.3 hrs
Contributing events (-)	-1134	-683	-245	-134	-72	0	0	0	0	0	0	
Combined events (+)	530	0	+175	+131	+94	+71	+38	+12	+5	+3	0	
Revised Events	**8908**	**4741**	**1699**	**771**	**383**	**337**	**251**	**190**	**155**	**132**	**248**	**2.5 hrs**
Friday												
Original Events	10364	5,609	2,445	694	448	289	180	173	163	109	254	2.3 hrs
Contributing events (-)	-1301	-769	-331	-117	-84	0	0	0	0	0	0	
Combined events (+)	600	0	+189	+176	+90	+74	+37	+17	+13	+3	0	
Revised Events	**9663**	**4840**	**2303**	**753**	**454**	**363**	**217**	**190**	**176**	**112**	**254**	**2.4 hrs**

By accounting for reparking the overall number of parking events observed is reduced by over 500 on both days (and now more closely conforms to the number of actual vehicles observed). Similarly, the number of 1 and 2 hour events observed is reduced substantially while the number of events lasting 3 hours or longer increased slightly across both days.

Table 1.3.22: Weekday Parkers by "Parking Profile"

Parker Category	All Parking Events	"Customer" profile #	%	"Employee" profile #	%	"Other" profile #	%
Thursday							
Original	9,512	8,225	86%	847	9%	440	5%
Reparking Adjustment	-604	-1,134		530			
Revised	8,908	7,091	80%	1,377	15%	440	5%
Friday							
Original	10,364	9,101	88%	876	8%	387	4%
Reparking Adjustment	-701	-1301		600			
Revised	9663	7800	81%	1476	15%	387	4%

Finally, Table 1.3.22 organizes all of the adjusted parking events observed into three "parking profiles." The "customer" profile includes vehicles that were observed parked for a continuous span of four hours or less. The employee profile includes vehicles that were observed for a continuous or nearly continuous span of 5 hours or more. The "other" profile includes vehicles that were observed multiple times throughout the day but had multiple or large gaps between observations. These vehicles could potentially be downtown residents or downtown employees who do not stay onsite for the entire workday.

It is critical to note that these profiles are simply a shorthand way of describing the different parking patterns outlined above. They are, at best, only rough approximations of the actual number of

employees or customers in the downtown. Nonetheless, they are a precise calculation of the number of vehicles that conform to a particular set of observed parking behaviors and it is these patterns of parking behaviors that must ultimately be managed and accommodated.

Parking in the Periphery

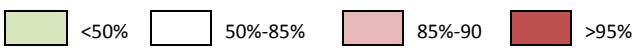
Parking data was collected for the downtown periphery on Thursday and Friday, October 7th and 8th, 2010. The periphery area is shown in Figure 1.2.1 and includes all of the on-street parking in the residential areas surrounding the downtown as well as parking in the City Hall lot, the Library Parking lots, the Eagle Park parking lots, and the Police and Fire Department visitor's lot. Data collection in the periphery was less intense than in the core and included semi-hourly and hourly occupancy counts between 6:00 a.m. and 10:00 p.m. on all facilities as well as three cycles of license plate recordings throughout the day (one in the morning between 6:00 a.m. and 9:00 a.m., one in the afternoon between 12:00 p.m. and 2:00 p.m., and one in the evening between 6:00 p.m. and 8:00 p.m.). The following summary presents the key findings related to parking utilization in the periphery as a whole and at several subareas or "hot spots" where parking was observed to be more heavily utilized.

Parking Occupancy in the Periphery

Parking occupancy data for the periphery is more difficult to present as a series of summary metrics due to the large size of the area and variety of land uses and parking types contained within. Table 1.3.23, below, presents overall on- and off-street occupancy rates for the entire periphery. These show that, at an aggregate level, parking in the periphery is substantially less occupied than it is in the core of downtown.

Table 1.3.23: Parking Occupancy in the Periphery

		AM				PM								
		6	8	10	11	12	1	2	3	4	5	6	7	8
Facility	Spaces	8	10	11	12	1	2	3	4	5	6	7	8	10
On-street														
Thursday	2419	27%	26%	28%	28%	31%	29%	29%	27%	27%	28%	29%	32%	33%
Friday	2419	27%	25%	25%	27%	29%	28%	27%	27%	27%	29%	32%	33%	33%
Off-street														
Thursday	385	25%	48%	67%	78%	77%	74%	74%	73%	75%	50%	45%	42%	32%
Friday	385	21%	38%	57%	72%	69%	72%	70%	69%	67%	54%	39%	36%	35%
Overall														
Thursday	**2804**	26%	29%	33%	35%	37%	35%	35%	33%	33%	31%	31%	33%	33%
Friday	**2804**	26%	27%	30%	33%	34%	34%	33%	33%	33%	32%	33%	33%	34%



Most of the parking in the periphery is made up of on-street spaces, and as Table 1.3.23 indicates, this parking as a whole rarely even reaches an aggregate 30% occupancy level and fluctuates only slightly during the day. The supply of off-street parking in the periphery is fairly small and includes the City Hall parking lot, the two Library parking lots, the two parking lots at Eagle Park, and the Police and Fire Department Administration visitor's lot. Unlike the on-street parking in the periphery, many of the off-

street lots do experience fairly high occupancy rates and exceed their practical capacity at times during the day. Tables 1.3.24 and 1.3.25 present by facility occupancy rates for the off-street public parking observed in the periphery.

Table 1.3.24: Off-Street Parking Occupancy in the Periphery (Thursday)

		AM				PM								
		6	8	10	11	12	1	2	3	4	5	6	7	8
Facility	Total SP	8	10	11	12	1	2	3	4	5	6	7	8	10
City Hall Lot	201	30%	74%	81%	82%	74%	75%	79%	80%	76%	31%	31%	30%	30%
Eagle Park 1	22	45%	45%	55%	91%	91%	73%	50%	64%	86%	77%	50%	68%	27%
Eagle Park 2	28	64%	46%	11%	36%	32%	14%	14%	18%	29%	43%	7%	11%	0%
Library Lot 1	72	0%	1%	43%	79%	94%	88%	89%	85%	81%	76%	58%	42%	32%
Library Lot 2	35	0%	0%	94%	94%	91%	89%	89%	63%	83%	91%	94%	94%	63%
FD / PD Administration	27	26%	48%	56%	59%	67%	78%	63%	70%	74%	56%	81%	70%	44%
total	**385**	**25%**	**48%**	**67%**	**78%**	**77%**	**74%**	**74%**	**73%**	**75%**	**50%**	**45%**	**42%**	**32%**

Table 1.3.25: Off-Street Parking Occupancy in the Periphery (Friday)

		AM				PM								
		6	8	10	11	12	1	2	3	4	5	6	7	8
Facility	Total SP	8	10	11	12	1	2	3	4	5	6	7	8	10
City Hall Lot	201	25%	56%	71%	68%	65%	69%	74%	74%	71%	49%	41%	48%	55%
Eagle Park 1	22	27%	45%	36%	86%	95%	86%	45%	32%	59%	64%	77%	55%	18%
Eagle Park 2	28	64%	7%	0%	36%	32%	29%	14%	11%	29%	36%	46%	21%	7%
Library Lot 1	72	0%	7%	43%	85%	82%	81%	88%	81%	61%	61%	11%	4%	1%
Library Lot 2	35	0%	9%	69%	100%	83%	94%	80%	91%	89%	74%	20%	11%	9%
FD / PD Administration	27	26%	48%	56%	59%	67%	78%	63%	70%	74%	56%	81%	70%	44%
total	**385**	**21%**	**38%**	**57%**	**72%**	**69%**	**72%**	**70%**	**69%**	**67%**	**54%**	**39%**	**36%**	**35%**

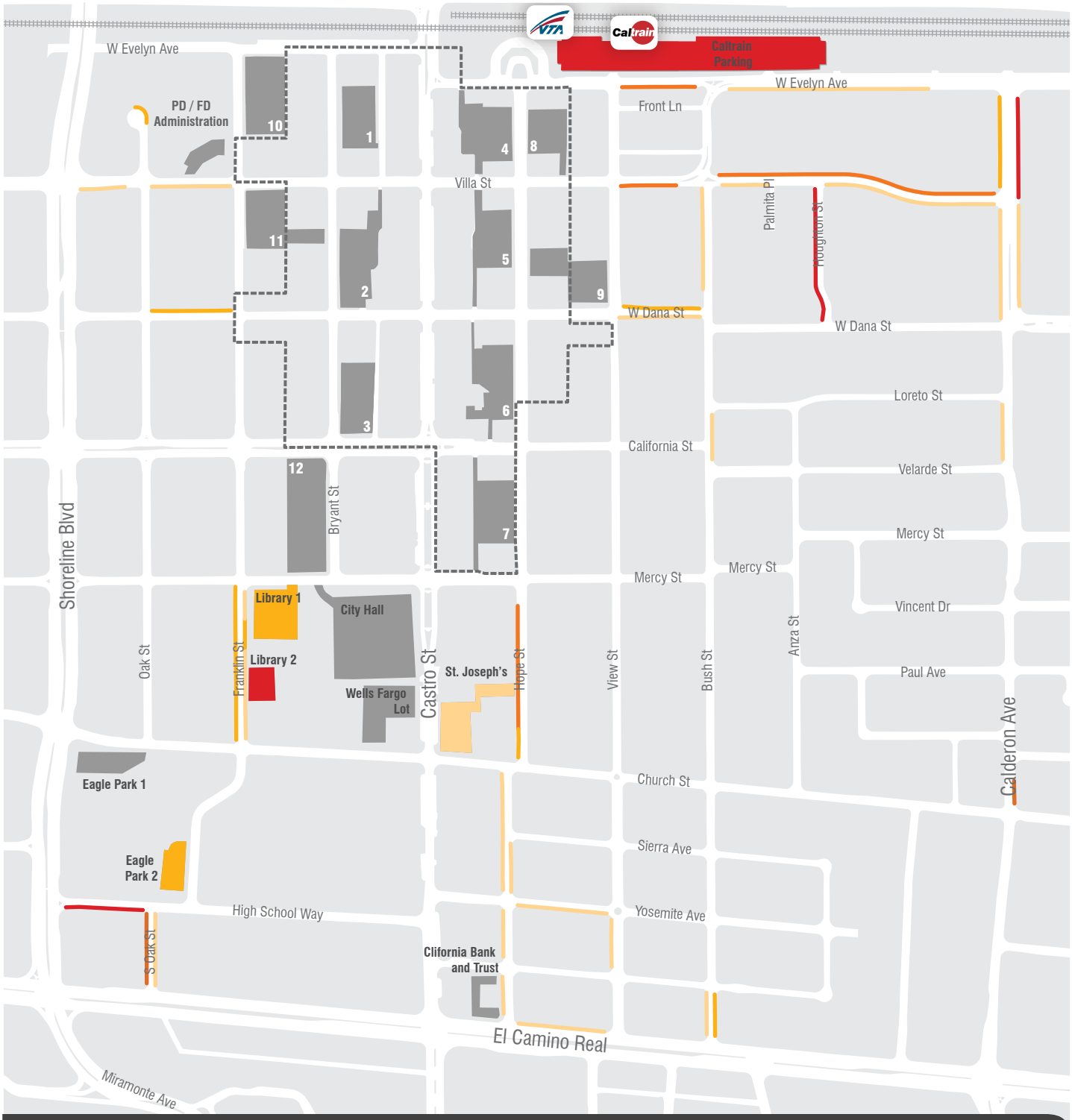
As the tables show, both the Library surface lot (Library Lot 2) and the underground Library garage (Library Lot 1) become quite full during the day and exceed the 85% practical capacity limit for multiple hours. The Eagle Park parking lot at the corner of Shoreline Boulevard and Church Street (Eagle Park 1) also exceeded its practical capacity on both days in the late morning and early afternoon. Finally, although the City Hall Lot was never observed to reach its capacity, it hovered in the 70%-80% occupancy rate for much of the day.

Given the data presented in the tables above, defining a "peak" hour for the periphery as a whole is not an analytically useful approach. Instead Figures 1.3.7 and 1.3.8 present two ways of looking at the occupancy data collected in the periphery that provide more useful indicators. Figure 1.3.7, is similar to Figure 1.3.6 for the core, and shows the number of hours on Thursday where individual blockfaces and

lots in the periphery were at or above their practical capacity. As the figure suggests, the majority of blockfaces never exceed their capacities but there are several "hot spots" of activity scattered throughout the periphery. These hot spots include Franklin Street near the Library as well the Library lots themselves, the parking along and around Hope Street just north of El Camino Real, and most prominently, a number of streets near the Downtown Mountain View Caltrain/JPB Station.

Although there are some on-street hot spots near the Caltrain/JPB Station and the Library, it is important to notice that the vast majority of streets in the periphery never reach their practical capacities. The absence of high occupancy levels on streets surrounding the downtown suggests that employee and commercial spillover parking from the downtown is not currently a widespread problem (although localized instances may exist).

Finally, Figure 1.3.8 presents a different way of looking at the occupancy data collected in the periphery. Rather than pick a single "peak hour" for the periphery, Figure 1.3.8 divides all of the periphery blockfaces and lots into three colors indicating whether each facility was observed to have its peak period of activity in the morning (6:00 a.m.-11:00 a.m.), midday /afternoon (11:00 a.m.-5:00 p.m.), or evening (5:00 p.m.-10:00 p.m.). Facilities are shown in a darker variant of each color if they reached or exceeded their practical capacity during their peak time period. Figure 1.3.8 does not yield any single overarching conclusion regarding parking in the downtown periphery. Instead, it provides localized, street by street information regarding periods of peak parking occupancy and demand. The scattered nature of peak time periods seen in Figure 1.3.8 also underscores the notion that parking in the periphery is best considered on a case study or small area basis and does not conform to any single set of trends or patterns.



Legend

Hours per day facility at or above capacity (85% occupied)

- 0 hours
- 1 - 2 hours
- 3 - 4 hours
- 5 - 6 hours
- 7 hours and up

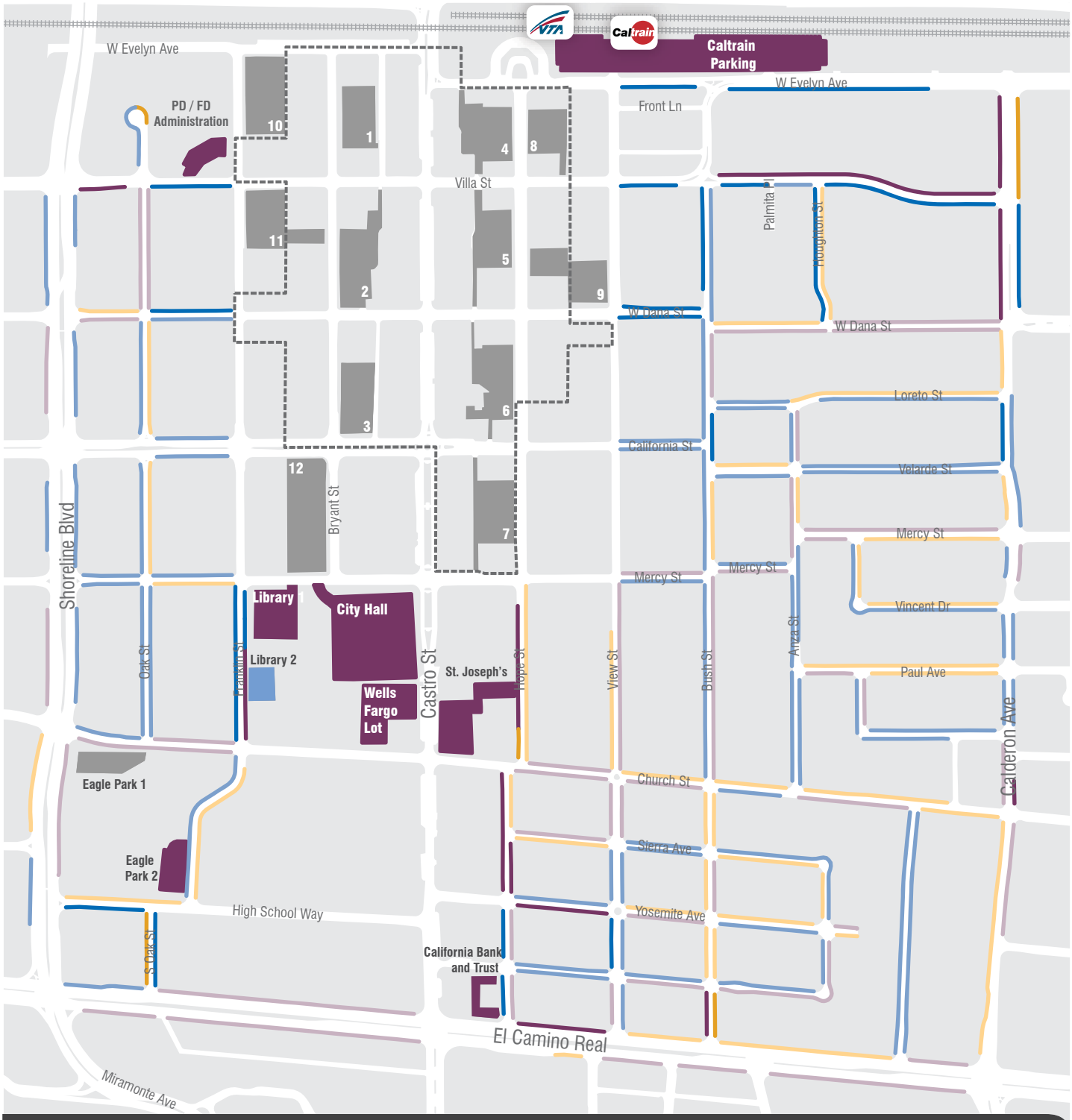
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 1.3.7 Total Hours At or Above Capacity - Periphery (Thursday)



Legend

Busiest Time of Day

	Did not reach capacity	Reaches or exceeds capacity
Morning (6am - 11am)		
Afternoon (Noon - 4pm)		
Evening (5pm - 8pm)		

- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 1.3.8 Busiest Time of Day - Periphery

Parking Duration in the Periphery

Limited license plate data was collected in the periphery in order to broadly separate vehicles into groups based on their parking durations. As noted previously, cycles of license plate recordings were conducted from 6:00 a.m. to 9:00 a.m., from 12:00 p.m. to 2:00 p.m., and from 6:00 p.m. and 8:00 p.m.. Table 1.3.26 presents a summary of this data for the periphery as a whole, showing the percentages of observed vehicles that were present during the morning, afternoon, and evening or some combination of those three periods.

Table 1.3.26: Parking Duration in the Periphery (Friday)

Times of Day Parked	Thursday			Friday		
	Morning	Afternoon	Evening	Morning	Afternoon	Evening
Total Vehicles Observed	1823			1732		
Morning only	19%			17%		
Afternoon only		27%			28%	
Evening only			22%			23%
Morning & afternoon	6%			7%		
Afternoon & Evening		10%			7%	
Morning & Evening		<- 4% ->			<- 4% ->	
All Day	12%			13%		

Much like the occupancy data presented for the periphery as a whole, only a limited amount of information can be gleaned by considering parking duration for the entire periphery. Table 1.3.26's primary utility is to provide a baseline breakdown of parking durations observed in the periphery that can be compared against the same set of data for smaller subareas.

Other Downtown Lots

Data collection efforts in the periphery also involved the collection of occupancy data at several non-City owned parking lots. These included the Caltrain/JPB Station lot and three private parking lots along the south end of Castro Street. Table 1.3.27 below presents a summary of hourly occupancy data for all four lots.

Table 1.3.27: Parking Occupancies at Select Non-City Lots

Space Type	Total Spaces	6am-8am	8am-10am	10am-11am	11am-12pm	12pm-1pm	1pm-2pm	2pm-3pm	3pm-4pm	4pm-5pm	5pm-6pm	6pm-7pm	7pm-8pm	8pm-10pm
Caltrain/JPB Lot														
Thursday	330	44%	98%	94%	96%	96%	96%	96%	98%	98%	91%	88%	71%	56%
Friday	330	35%	86%	83%	83%	88%	87%	86%	85%	97%	93%	78%	63%	58%
Wells Fargo Lot														
Thursday	72	4%	21%	38%	68%	75%	72%	72%	68%	71%	58%	56%	43%	35%
Friday	72	6%	42%	64%	69%	63%	74%	64%	57%	82%	65%	65%	49%	58%
St. Joseph's Church Lot														
Thursday	99	2%	43%	100%	57%	55%	53%	56%	53%	38%	14%	14%	16%	14%
Friday	99	2%	13%	12%	12%	7%	5%	9%	9%	8%	18%	19%	19%	22%
California Bank & Trust Lot														
Thursday	14	0%	14%	29%	43%	29%	21%	36%	21%	29%	7%	0%	0%	0%
Friday	14	0%	7%	29%	43%	36%	29%	36%	29%	43%	21%	7%	0%	0%

<50% 50%-85% 85%-90 >95%

As the table indicates, the Caltrain/JPB lot fills to above capacity relatively early in the morning and remains full until approximately 7:00 p.m. in the evening. This observation is consistent with past parking studies and with information provided by VTA and Caltrain.

The private lots observed downtown were considerably less occupied. While the Wells Fargo Lot was well utilized through most of the day it never actually reached capacity. Similarly, the California Bank and Trust Lot never even reached a 50% utilization level on the two days observed. The St. Joseph's Church Lot was also largely empty for many observation hours except for a brief period from 10:00 a.m.-11:00 a.m. on Thursday when it was observed to be completely full, likely due to a specific event.

Parking Hot Spots

As figure 1.3.7 showed, there are several small subareas within the larger periphery that show consistently higher occupancy rates throughout the day. Given their higher degree of utilization, three of these subareas have been extracted from the larger set of periphery data and analyzed in more detail. These subareas include the residential neighborhood to the south of the Caltrain/JPB Lot, the blockfaces between Hope Street and Castro Street at the south end of the downtown, and the streets and parking facilities related to the Library. The precise facilities included in each "hot spot" are shown in figure 1.3.9.

Legend

- Hot Spot 1: VTA/Caltrain Station and Adjacent Neighborhood
- Hot Spot 2: Hope Street Area
- Hot Spot 3: Library Area
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure 1.3.9 Parking Activity Hot Spots

Caltrain/JPB Station and Adjacent Neighborhood

The residential neighborhood surrounding the Downtown Mountain View Caltrain/JPB Station exhibits significantly higher on-street parking occupancies than the rest of the periphery. While average on-street periphery occupancy rates were observed to be between 20% and 30%, Table 1.3.28 shows that on-street occupancies observed on the blockfaces near the station ran between 50% and 80%. As shown in Figure 1.3.7, a number of individual blockfaces within this area reached or exceeded their practical capacities repeatedly throughout the day even though the neighborhood as a whole always had some parking available.

Table 1.3.28: Parking Occupancies at and around the Caltrain/JPB Station

		AM				PM								
		6	8	10	11	12	1	2	3	4	5	6	7	8
Day / Facility	Spaces	8	10	11	12	1	2	3	4	5	6	7	8	10
Thursday														
On-Street	215	44%	54%	55%	63%	67%	66%	65%	59%	59%	72%	73%	67%	73%
Caltrain/JPB Lot	330	44%	98%	94%	96%	96%	96%	96%	98%	98%	91%	88%	71%	56%
Friday														
On-Street	215	47%	52%	54%	59%	62%	68%	70%	56%	54%	69%	78%	75%	74%
Caltrain/JPB Lot	330	35%	86%	83%	83%	88%	87%	86%	85%	97%	93%	78%	63%	58%

<50% 50%-85% 85%-90 >95%

Table 1.3.29 shows the distribution of parking durations observed across the on-street parking included in the Caltrain/JPB Station area "hot spot" (duration of stay data was not collected at the actual Caltrain/JPB lot). When compared to the overall periphery duration of stay data shown in Table 1.3.26, the Caltrain/JPB Station area showed a significantly higher number of cars parked in both the afternoon and evening, especially on Thursday. This pattern suggests spillover parking from the station, and could be particularly indicative of commuters arriving later in the morning and having to park in the neighborhood after being unable to find parking in the actual station lot.

Table 1.3.29: Parking Durations at and around the Caltrain/JPB Station

	Thursday			Friday		
Times of Day Parked	Morning	Afternoon	Evening	Morning	Afternoon	Evening
Total Vehicles Observed	259			272		
Morning only	20%			15%		
Afternoon only		15%			20%	
Evening only			22%			33%
Morning & afternoon	5%			8%		
Afternoon & Evening		24%			9%	
Morning & Evening		2%			1%	
All Day	12%			12%		

Hope Street Area

The Hope Street Area, roughly bounded by El Camino Real, Castro Street, View Street, and Mercy Street, included a number of blockfaces where occupancy levels were elevated during the day. The area was broken out as a hot spot for analysis in part because it was one of the few areas in the periphery where it appeared that generalized commercial and business spillover might be contributing to elevated occupancy levels.

Table 1.3.30: Parking Occupancies at and around Hope Street

		AM				PM								
		6	8	10	11	12	1	2	3	4	5	6	7	8
Day / Facility	Spaces	8	10	11	12	1	2	3	4	5	6	7	8	10
Thursday														
On-Street	222	22%	32%	45%	44%	62%	45%	41%	34%	32%	27%	28%	41%	32%
Friday														
On-Street	222	20%	20%	30%	31%	35%	33%	30%	31%	30%	28%	30%	32%	32%

<50% 50%-85% 85%-90 >95%

Table 1.3.30 shows that, overall, the area did exhibit somewhat higher occupancy levels than the periphery as a whole, particularly on Thursday. Any significant spillover, however, is likely fairly limited as substantial parking capacity remained in the area throughout all of the day.

Table 1.3.31: Parking Occupancies at and around Hope Street

	Thursday			Friday		
Times of Day Parked	Morning	Afternoon	Evening	Morning	Afternoon	Evening
Total Vehicles Observed	**138**			**138**		
Morning only	13%			14%		
Afternoon only		39%			36%	
Evening only			25%			27%
Morning & afternoon	3%			6%		
Afternoon & Evening		8%			7%	
Morning & Evening		5%			2%	
All Day	7%			8%		

Table 1.3.31 shows an elevated level of "afternoon only" parkers on both days and a lower level of "all day" parkers, a pattern consistent with a modest amount of spillover from commercial businesses along Castro Street. Again, however, the level of spillover occurring appears to be relatively modest and based on the data collected is likely not impacting the parking behaviors of most residents.

Library Area

Finally, the two Library parking lots and both sides of Franklin Street between Mercy Street and Church Street were categorized as a hot spot for further analysis. As Table 1.3.32 shows, the on-street parking in front of the Library did experience elevated occupancy levels although, as a whole, it never exceeded its practical capacity except for one hour on Thursday evening when street parking near the library was observed to be completely full (possibly related to a special event). It is worth noting that during these same time periods parking in both of the Library's dedicated parking facilities was considerably more utilized than the on-street parking, indicating that Library employees and patrons were actively using the dedicated parking (including the underground parking) and were not simply resorting to parking on-street.

Table 1.3.32: Parking Occupancies at and around the Library

		AM				PM								
		6	8	10	11	12	1	2	3	4	5	6	7	8
Day / Facility	Spaces	8	10	11	12	1	2	3	4	5	6	7	8	10
Thursday														
On-Street	89	65%	60%	53%	55%	52%	55%	46%	46%	37%	42%	44%	48%	100%
Library Lot 1	72	0%	1%	43%	79%	94%	88%	89%	85%	81%	76%	58%	42%	32%
Libarary Lot 2	35	0%	0%	94%	94%	91%	89%	89%	63%	83%	91%	94%	94%	63%
Friday														
On-Street	89	62%	45%	48%	49%	56%	42%	36%	37%	37%	37%	39%	43%	47%
Library Lot 1	72	0%	7%	43%	85%	82%	81%	88%	81%	61%	61%	11%	4%	1%
Libarary Lot 2	35	0%	9%	69%	100%	83%	94%	80%	91%	89%	74%	20%	11%	9%

<50% 50%-85% 85%-90 >95%

Table 1.3.33 shows parking durations at and around the library. Durations show an elevated number of afternoon only parkers, and a lower rate of morning only parkers, morning and evening parkers, and all day parkers. This pattern is consistent with what would be expected of parking largely dominated by Library employees and patrons.

Table 1.3.33: Parking Durations at and around the Library

	Thursday			Friday		
Times of Day Parked	Morning	Afternoon	Evening	Morning	Afternoon	Evening
Total Vehicles Observed	**234**			**209**		
Morning only	10%			11%		
Afternoon only		41%			55%	
Evening only			32%			19%
Morning & afternoon	4%			2%		
Afternoon & Evening		7%			7%	
Morning & Evening		1%			1%	
All Day	5%			5%		

Task 2: Projecting Parking Demand

Modeling future parking demand at public parking facilities in downtown Mountain View is a multistep process whose results rest on an interrelated set of assumptions and data inputs. The ultimate purpose of modeling parking demand in future years is to see whether the current parking supply will be sufficient to accommodate anticipated needs and to understand the magnitude of any parking surplus or deficit. For the purpose of this study, a parking demand model has been developed in a flexible format that allows different assumptions to be tested and revised. Accounting for new development in and around the downtown, the removal or addition of new parking supplies, changes in how people travel to the downtown, and the adoption of new methods for managing parking are all factors that can impact the future demands placed on the public parking supply.

This document includes a discussion of the assumed 2010 "baseline" conditions used to calibrate the model and then presents basic projections of parking supply, demand, deficits, and surpluses for 2015, 2020, and 2025. These model estimates will provide important input for subsequent study tasks related to financial analysis and the model is designed to be further refined and adjusted as new parking supplies and management strategies are considered. Finally, the report also considers several alternative demand scenarios as a means of understanding how parking demand projections might vary based on different assumptions about future conditions and parking management strategies.

The following briefly summarizes the current key findings of the Task 2 Report:

- Assuming a target 85% occupancy level for all facilities, there is currently a 146 space parking surplus in the 16 block commercial core of the downtown bordered by West Evelyn Avenue, View Street, Mercy Street, and Franklin Street during the midday Thursday peak. In the same area there is currently a 90 space parking deficit during the Friday evening peak.
- By 2015, the 16 block downtown core is projected to have a parking deficit of 178 spaces during the Thursday midday peak and a deficit of 330 spaces during the Friday Evening peak. This deficit is primarily driven by the removal of Lot 10 from the parking supply combined with the construction of new office developments that rely heavily on in-lieu fees to satisfy their parking requirements.
- By 2020, the parking deficit in the 16 block core of the downtown is projected to have increased to 417 spaces during the Thursday midday peak and 578 during the Friday evening peak. The increase in the parking deficit is primarily driven by the assumption that temporary parking lots 11 and 12 will be developed and removed from the parking supply prior to 2020.
- By 2025, the parking deficit in the 16 block core of the downtown is projected to have increased to 483 spaces during the Thursday midday peak and 603 during the Friday evening peak. This increase in the projected parking deficit does not assume any specific supply changes or in-lieu and is primarily driven by assumed background growth in the demand for parking.
- There is currently a substantial surplus of parking in areas outside of the core 16 block commercial core. Parking demand in these areas is not projected to increase significantly in future years nor is the parking supply in these areas expected to change. As the parking deficit in the 16 block core of the downtown grows, however, the potential for widespread spillover parking in these areas increases.

- Alternative scenarios related to higher and lower rates of economic growth and changes in how individuals travel to the downtown were also evaluated to determine the contribution of these variables towards future parking deficits. The analysis revealed that the commercial core of the downtown is still projected to run a substantial parking deficit in all future years. This deficit is driven by the anticipated loss of temporary parking lots and increased demand due to developer reliance on in-lieu parking.
- The alternative scenario analysis did reveal, however, that changes in future assumptions about future economic growth and mode share can significantly impact the size of the anticipated parking deficit. The different combinations of scenarios evaluated resulted in overall future parking demand levels that ranged between 8.8% below base case projections and 4.8% above base case projections by the year 2025.
- These percentage changes in parking demand have the potential either to increase or decrease the anticipated 2025 parking deficit by anywhere between 100 to over 300 spaces. Holding economic growth considerations constant, if the City were able to achieve an aggressive 7.5% reduction in the rate of driving to the downtown over the next 15 years, a parking deficit would still exist but it would be over 175 spaces lower than the base case scenario.

2.1: Existing Conditions

Just like the observations conducted in Task 1, the following analysis only attempts to model future parking demand at public, city-owned facilities in the downtown study area. These facilities include all on-street parking as well as City-owned parking lots and structures throughout the downtown. The distribution of parking that was observed at these public facilities in 2010 is taken as a baseline level of activity and is projected forward in five year increments based on a variety of input assumptions described in detail below. The following report section describes how the data observations developed in the Task 1 report were combined with other assumptions to develop a 2010 baseline condition that was used to populate the model.

Parking Analysis Zones

A critical issue in developing this or any other projection of parking demand relates to the level of geographic analysis used in the modeling process. Using too large of an analysis area when calculating parking surpluses or deficits can have the effect of hiding or "masking" problems by averaging them out over large distances. For example, just because one corner of the downtown has a lot with 100 empty spaces does not necessarily mean that this parking supply will be able to accommodate the parking needs of someone who can't find a parking space 8 blocks away. At the same time, however, defining analysis geographies too narrowly can overstate parking problems and implies an unwarranted level of precision. As surveys of downtown pedestrians in Task 4 indicated, visitors to the downtown frequently park 2, 3 and occasionally even 4 blocks from their destination and have varying ranges of tolerance for parking and walking. Similarly, individual uses and businesses will change in the coming years and the specific block by block demand for parking will fluctuate accordingly.

The approach adopted in this modeling effort settles on a middle ground where the downtown was divided into 12 multi-block zones roughly corresponding to major boundaries and activity zones in the downtown (see Figure 2.1.1). The Parking Maintenance Assessment District and main commercial core of the downtown roughly comprise the 16 block area bordered by West Evelyn Avenue, Franklin Street, Mercy Street, and View Street, and includes 4 analysis zones, each making a 2 block by 2 block square. Pedestrian survey responses collected during Task 4 indicated that during both the midday and evening peaks the vast majority of individuals parking in the downtown found a space within at least 3 blocks of their destination and these four block squares thus seem to be good approximations of the area a typical downtown visitor would be willing to walk for parking. Outside of the core downtown the zones are slightly larger and conform to major streets or boundaries. This assumption was believed to be reasonable given that the major function of the parking model in these outer zones is to hold constant the parking demand likely attributable to residents while tracking any anticipated changes in parking related to other uses.

Legend

- Primary downtown parking zones
- Other study area parking zones
- Parking lots
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 2.1.1 Parking Analysis Zones

Throughout this report, model outputs are presented at two geographic levels; the individual zone level and an aggregated level for the 16 block core area of downtown bordered by West Evelyn Avenue, Franklin Street, Mercy Street, and View Street. It is important to reemphasize that projected deficits reported at these two levels will not match and that the sum of individual parking deficits projected at the zone level will be greater than the aggregate 16 block deficit projection. This is because the greater the level of aggregation the greater potential there is for surplus parking in one area to offset parking deficits in another area. For example, if one block had a surplus of vacant parking while a neighboring block had a projected deficit this would appear as a problem if analyzed on a block by block level. If the blocks were aggregated into a larger zone, however, the surplus and deficit parking might largely cancel each other out, suggesting a more balanced parking system. When considering future parking supply and management strategies, it is informative to look at both geographic projections. The number that is ultimately more accurate will depend on the kinds of management strategies adopted and how user groups with different parking needs and tolerances for walking are directed towards different parking supplies.

Note that for the same reasons discussed above, parking surpluses and deficits are never presented in terms of study-area wide totals. The full study area for the Downtown Mountain View Parking Study encompasses a 65 block area from Calderon Avenue to Shoreline Boulevard and from West Evelyn Avenue to El Camino Real and includes large areas that are predominantly residential. Aggregating future parking surpluses and deficits across these residential areas would mask problems in the downtown and would effectively create an assumption that residential neighborhoods could simply absorb all of the downtown's parking needs. This is not a desirable outcome from a policy perspective nor is it a realistic assumption (given how far away from the 16 block core downtown the borders of the full study area are). All of the study area is thus included in the model as individual zones, but the only aggregate statistic that is provided is for the 16 block core downtown (Zones 1 through 4).

Table 2.1.1, summarizes the 12 zone divisions shown in Figure 2.2.1 in terms of their physical supply of public parking, whether the parking is located on- or off-street, and whether the parking is broadly restricted to "short term" (2 hours or less) or "long term" (more than 2 hours or unrestricted).

Table 2.1.1: Existing Public Parking Supply Summarized by Zone

Zone	Total Spaces	Location		Restriction	
		On-street	Off-street	Short Term	Long Term
Zone 1	875	232	643	600	274
Zone 2	495	162	333	492	3
Zone 3	748	187	561	692	56
Zone 4	382	190	192	319	63
16-block subtotal	**2500**	**771**	**1729**	**2103**	**396**
Zone 5	442	137	305	75	367
Zone 6	263	263	0	51	212
Zone 7	213	213	0	40	173
Zone 8	245	218	27	30	215
Zone 9	383	333	50	17	366
Zone 10	270	270	0	29	241
Zone 11	875	875	0	21	854
Zone 12	478	478	0	0	478

Tables 2.1.2 and 2.1.3, present 2010 parking utilization data gathered in Task 1 for the observed Thursday midday peak and Friday evening peak. Additionally tables 2.1.2 and 2.1.3 provide estimates by zone of two key parking characteristics that will be used in the modeling process: the percentage of parking activity assumed to be "long term" or "short term" (either over or under 2 hours) and the percentage of observed parking activity assumed to be "residential" or "dynamic" (non-residential and subject to greater fluctuation).

The difference between assumed "residential" and "dynamic" parking bears further discussion. For modeling purposes, parked cars that are assumed to belong to residents are treated very differently from ones that are assumed to relate to other downtown activities such as work, shopping or commuting ("dynamic" parking). Existing residential parking demand in the neighborhoods surrounding the downtown is assumed to remain as a constant baseline in future years, and will not be affected by changes in the commercial vacancy rate, citywide growth, or changes in how people travel to the downtown. (Parking related to specific future residential developments, such as the Prometheus project, is considered separately). "Dynamic" parking, on the other hand, includes all of the non-residential parking activity in the downtown and will be affected by all of the factors described above. This dynamic parking demand is the primary focus of the modeling effort. The zone by zone percentages of long term and short term parking and residential and dynamic parking are rough estimates based on observations and data collected during Task 1. Note that "residential" parking in the core of the downtown is set to 0%, even though there is undoubtedly some residential parking occurring at downtown public facilities. This is done deliberately to reflect an assumption that any residential vehicles parked in the commercial core of downtown are few in number and will be subject to the same management and supply changes as non-residential vehicles.

Table 2.1.2: Existing Public Parking Utilization Summarized by Zone, Thursday Midday Peak

Zone	Total Spaces	Thursday Midday Peak	Parking Duration		Parking Type	
			Long Term	Short Term	Dynamic	Residential
Zone 1	875	782	50%	50%	100%	0%
Zone 2	495	439	50%	50%	100%	0%
Zone 3	748	429	50%	50%	100%	0%
Zone 4	382	329	50%	50%	100%	0%
16-block subtotal	**2500**	**1979**	**50%**	**50%**	**100%**	**0%**
Zone 5	442	335	25%	75%	40%	60%
Zone 6	263	125	25%	75%	40%	60%
Zone 7	213	139	25%	75%	40%	60%
Zone 8	245	97	25%	75%	15%	85%
Zone 9	383	130	25%	75%	15%	85%
Zone 10	270	178	25%	75%	25%	75%
Zone 11	875	160	25%	75%	0%	100%
Zone 12	478	91	25%	75%	0%	100%

Table 2.1.3: Existing Public Parking Utilization Summarized by Zone, Friday Evening Peak

Zone	Total Spaces	Friday Evening Peak	Parking Duration		Parking Type	
			Long Term	Short Term	Dynamic	Residential
Zone 1	875	843	40%	60%	100%	0%
Zone 2	495	472	40%	60%	100%	0%
Zone 3	748	533	40%	60%	100%	0%
Zone 4	382	367	40%	60%	100%	0%
16-block subtotal	**2500**	**2215**	**40%**	**60%**	**100%**	**0%**
Zone 5	442	197	25%	75%	40%	60%
Zone 6	263	95	25%	75%	40%	60%
Zone 7	213	87	25%	75%	40%	60%
Zone 8	245	122	25%	75%	15%	85%
Zone 9	383	108	25%	75%	15%	85%
Zone 10	270	189	25%	75%	25%	75%
Zone 11	875	249	25%	75%	0%	100%
Zone 12	478	111	25%	75%	0%	100%

The peak utilization data contained in Tables 2.1.2 and 2.1.3 can be used to develop a baseline estimate of parking deficits and surplus by zone and for the 16 block commercial core of downtown. For the purposes of this modeling analysis, each zone's parking surplus or deficit is calculated by subtracting the observed or anticipated parking demand from 85% of the corresponding zone's parking supply. The resultant number is labeled as the "nominal surplus" in tables throughout this report. For modeling purposes, 85% is used as a conservative practical capacity standard. When parking is more than 85% full, drivers may encounter full facilities or have to "cruise" for a parking space generating excess traffic in the downtown. For current and modeled years a secondary, more "aggressive" estimate of parking surpluses and deficits is calculated that uses an 85% capacity estimate for on-street parking but allows off-street occupancy levels to rise to 90%. While 85% occupancy is a standard target for on-street occupancy, occupancy levels up to 90% are often suitable for off-street facilities and will not necessarily have an adverse impact on the function of lots or parking structures.

In addition to observed parking demand, it is also necessary to make a small adjustment to the baseline condition to account for the possibility of "latent" parking demand. Latent parking demand refers to the set of individuals who would like to drive downtown but decide not to make the trip because they find parking to be too difficult or frustrating. The assumption is made that when parking is already congested and overfull, there are at least some individuals who would drive downtown were more parking available. A 2010 estimate of latent demand is developed for all zones where parking was observed to already be more than 85% full, with the estimate set to 2% of the assumed "dynamic" (non-residential) parking demand. In practice this works out to an estimated total latent demand of 31 cars in during the Thursday midday peak and 34 cars during the Friday evening peak. Latent demand is not calculated separately for future years since it is already accounted for in the 2010 baseline and is thus automatically projected forward for all future years and included in each subsequent calculation of supply and demand.

Taking all of the above into account, Table 2.1.4, below, presents the 2010 baseline estimate of parking surpluses and deficits by zone. The "nominal" surplus is calculated using a target 85% capacity level for

all parking while the "aggressive" surplus assumes a target 85% practical capacity on-street and a target 90% capacity off-street. Estimated deficits are shown highlighted in pink.

Table 2.1.4: 2010 Baseline Parking Surpluses

Zone	Total Spaces	Thursday Midday Peak			Friday Evening Peak		
		Estimated Demand	Nominal Surplus	Aggressive Surplus	Estimated Demand	Nominal Surplus	Aggressive Surplus
Zone 1	875	782	-38	-6	843	-99	-67
Zone 2	495	439	-18	-2	472	-51	-35
Zone 3	748	429	207	235	533	103	131
Zone 4	382	329	-4	5	367	-42	-33
16-block subtotal	**2500**	**1979**	**146**	**232**	**2215**	**-90**	**-4**
Zone 5	442	335	41	56	197	179	194
Zone 6	263	125	99	99	95	129	129
Zone 7	213	139	42	42	87	94	94
Zone 8	245	97	111	113	122	86	88
Zone 9	383	130	196	198	108	218	220
Zone 10	270	178	52	52	189	41	41
Zone 11	875	160	584	584	249	495	495
Zone 12	478	91	315	315	111	295	295

As Table 2.1.4 indicates, the downtown is already estimated to suffer from existing parking deficiencies in Zones 1 and 2, and at times in Zone 4, as well as in the overall 16 block commercial core of the downtown. Most of the deficits are relatively moderate, particularly if the more aggressive capacity assumption is used. On a 16 block core basis, there is sufficient capacity during the Thursday midday peak while there is a deficit of 4 to 90 spaces during the Friday evening peak depending on the capacity assumption used.

Additional Baseline Assumptions

Finally, prior to developing future year projections of parking demand, it is necessary to review some additional assumptions for the 2010 baseline year regarding commercial vacancy rates, employment, and population, and mode of travel to the downtown. These assumptions do not figure directly into the numbers above (which are derived directly from observed demand) but they serve as the benchmark for future year adjustments and need to be documented and described.

Mode split:

The mix of different ways people travel to the downtown (the "mode split") is an important factor in estimating future parking demand and considering the impact of different policies. Within the model, the mode split is applied to all "dynamic" (non-residential) parking and is expressed as a percentage of people who drove downtown (and thus use downtown parking) relative to those who took public transit, walked, biked, or used some other mode. The mode split also makes an assumption about the average vehicle occupancy for all car trips to the downtown. For this analysis a commonly used,

standard vehicle occupancy rate of 1.2 has been assumed for both the midday and evening peak in the present and all future years.

Developing an estimate of mode split for trips in the downtown is difficult due to the relatively limited availability of current and appropriately defined data. Ultimately, the data collected in the Task 4 intercept surveys was deemed to be the most reliable data sources describing how people travel to downtown since it was collected recently, was targeted to a specific geography and demographic, and was available for both the midday and evening peak.

The 2000 Bay Area Travel Survey (BATS) conducted by the Municipal Transportation Commission provides another data source for mode split information since it includes all trips categorized by destination and original type. For the purposes of determining a mode split for the "dynamic" non-residential component of downtown parking demand, the BATS file corresponding to all non-home based trips out the downtown was used (thus this file captures all trips leaving the downtown that did not originate at a respondent's residence). The BATS data is a useful benchmark for checking and validating survey data but is also problematic for several reasons. First, it was collected in 2000, prior to the advent of Caltrain's Baby Bullet Express service and likely understates transit ridership relative to current levels. Second, even at the smallest available aggregation it provides information for a larger geographic area than just downtown Mountain View and includes trips from a wide range of days and times rather than the specific peaks used in the model. The BATS data does, however, reinforce the findings of the survey that downtown Mountain View has a very high share of people walking to the downtown and a relatively low level of bicycle usage.

The 2000 BATS data was compared against the mode of transportation that pedestrians surveyed in the downtown during the fall of 2010 reported using. These percentages are shown in table 2.1.5 below, both in their raw, reported form, and with the adjusted version ultimately used in the model.

Table 2.1.5: 2010 Baseline Mode Split Comparison and Adjustment

Data Sources	% Drove or rode in car	% transit	% walked	% bicycled	% other
BATS 2000 Data	88%	1%	11%	0%	0%
Thursday midday reported	70%	6%	19%	3%	2%
Friday evening reported	87%	5%	7%	0%	1%
Thursday midday adjusted	**78%**	**6%**	**13%**	**3%**	**0%**
Friday evening adjusted	**86%**	**5%**	**8%**	**1%**	**0%**

Slight adjustments to the reported survey mode splits were made as shown above for several reasons. The most significant adjustment was made to the number of Thursday respondents who reported walking vs. driving downtown. The number of people stating they walked was likely overstated since some of the respondents may have been confused by the question and responded "walk" if they had driven to work but were currently walking to lunch. Other changes included distributing the "other percentages" among modes and adjusting the evening walk and bike percentages upwards to account for the inclement weather that was occurring on the Friday evening when pedestrians were surveyed. This mode split has been held constant for future projection years. Assuming a different starting mode split does not change current year projections (since the parking demand in 2010 was based on direct vehicle counts) but does change the outcome in future years. Lowering the daytime walk-share from 13% to 8% while increasing drive-share, for example, increases parking demand in future years by a

factor of 6%. Potential changes in parking demand related to shifting mode splits are discussed further at the end of this analysis along with other "alternative" demand projection scenarios.

Commercial Vacancy:

Commercial vacancy rates are used throughout the model as a proxy for the level of commercial activity in the downtown as a whole. The model assumes that in future years the economic situation in the downtown will likely improve and commercial activity levels will increase. A baseline 2010 vacancy rate of 7.7% was estimated for the downtown based on the Second Quarter 2010 Cassidy Turley / CPS Downtown Mountain View Office Report. This number reflects the vacancy rate for office and R&D space in the downtown at the time that data was collected in the summer of 2010 and may not entirely capture activity levels related to other kinds of commercial uses such as retail and restaurant space. Recent city data indicates that vacancy rates have fallen substantially over the past year in line with the model's assumptions related to future economic growth. The impacts of different future vacancy rates are evaluated at the end of this analysis along with other "alternative" demand projection scenarios.

Population and Employment:

Population and employment growth within the City of Mountain View's sphere of influence, as defined by the Association of Bay Area Governments (ABAG) provide another important basis for estimating an overall rate of growth in the number of non-residential trips coming to the downtown as a whole. Spheres of Influence are the geographic unit used by ABAG to project population and employment growth at the local level. They are generally slightly larger than the exact jurisdictional boundaries of individual cities. The ABAG 2010 projections for population and employment growth in the City of Mountain View sphere of influence were ultimately used directly in the model since they were consistent and available in 5 year increments and because the ABAG 2030 projections were a relatively close match to the City's own 2030 estimate of projected population and employment growth under general plan build out. The 2010 ABAG baseline estimate for the number of residents living in the Mountain View sphere of influence is 73,200 and the number of jobs estimated for the same area is 56,300.

2.2: Future Parking Demand and Supply

The following report section presents projections of future parking demand and supply in the downtown for 2015, 2020, and 2025. The assumptions used to develop each demand and supply estimate are described along with subsequent projections of parking surpluses and deficits by zone and for the 16-block commercial core of the downtown. Projected surpluses and deficits using the nominal (85% target capacity) projection are shown graphically for all years in Figures 2.2.1 and 2.2.2 for both the Thursday midday and Friday evening peaks. As noted in the introduction, parking demand is anticipated to grow steadily over time while, in this baseline case set of projections, supply remains constant or is removed when public parking lots are converted to development. This background growth and declining supply was combined with the in-lieu parking requirement of specific planned developments to create significant deficits in Zones 1 through 4 of the core downtown. The section concludes by evaluating a range of alternative demand scenarios and quantifying how future parking impacts in the downtown might vary based on different combinations of external conditions and policy choices.

2015 Model Year

Supply Assumptions

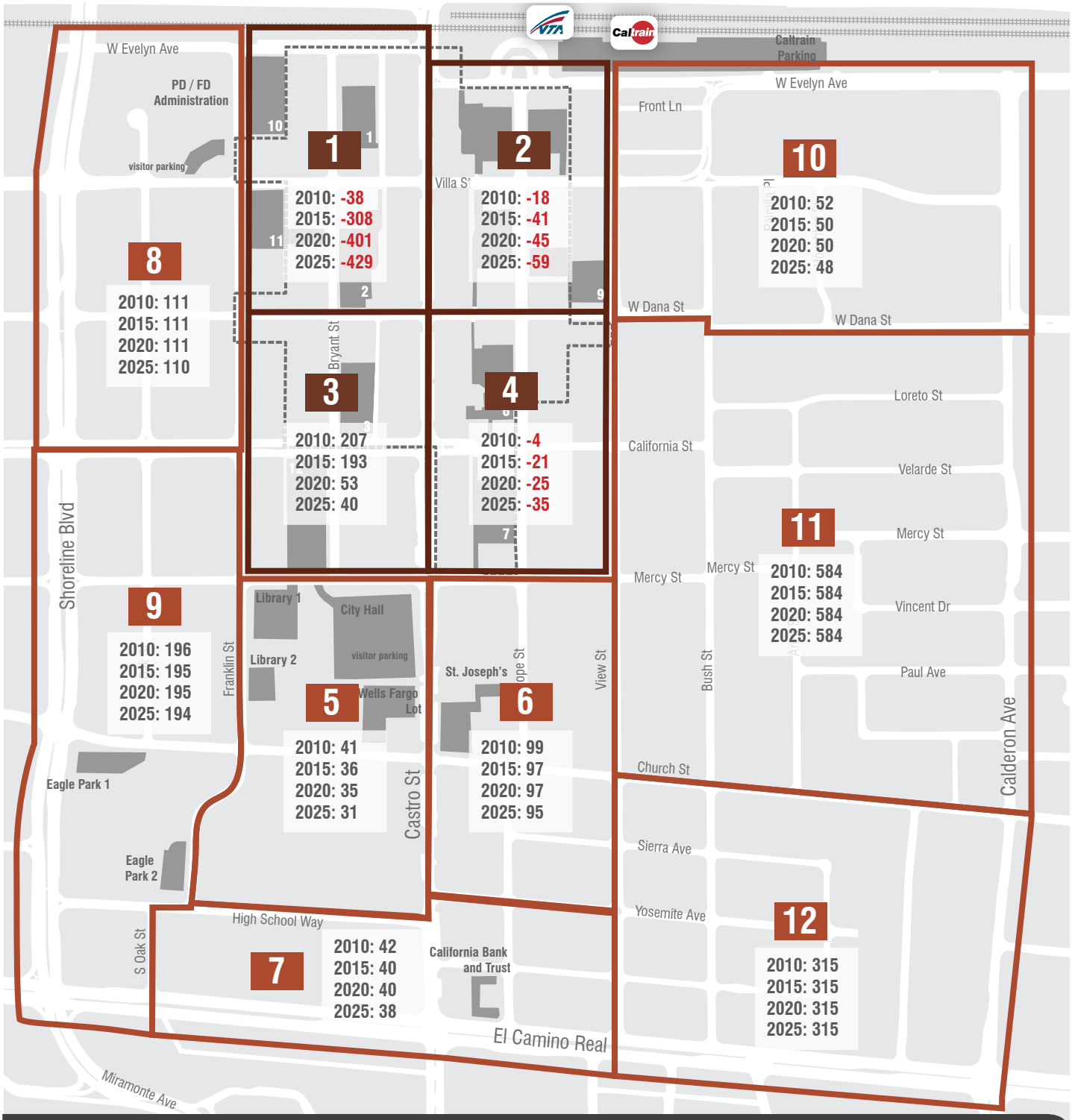
The model assumes that Lot 10 (located in Zone 1) will be developed as an affordable housing site and that the 127 public parking spaces currently located on Lot 10 will cease to be part of the downtown supply by 2015. This means that the parking supply for Zone 1 will be reduced by 127 spaces with no commensurate reduction in demand assumed.

Demand Assumptions- downtown wide growth:

It is assumed that the general level of demand for parking in the downtown will experience background growth (i.e., growth not related to any one specific use or development) between 2010 and 2015 due to changes in the commercial vacancy rate as well as residential and employment growth in the City of Mountain View's sphere of influence. This "background" growth is assumed to be proportionally distributed through all downtown zones based on the percentage of their parking that is assumed to be "dynamic" (not related to existing residential uses).

First, the model assumes that the commercial vacancy rate in the downtown will fall from the 2010 estimate of 7.7% to 2015 level of 5.0%. The commercial vacancy rate is taken as a general indicator of non-residential parking activity in the downtown and non-residential trips to the downtown are anticipated to rise a corresponding 2.7% as a result of the change in vacancy rates.

Second, the model assumes that residential and employment growth in the City's sphere of influence will result in more trips into the downtown and a higher demand for parking. ABAG projects that 4,000 new residents will be added to the City of Mountain View's sphere of influence between 2010 and 2015 along with 1,080 new jobs. 250 of these jobs are netted out of this calculation since they are directly within the downtown and their parking demand is accounted for through a different methodology (see below). For modeling purposes, the following rough assumptions have been made regarding the impact of new residents and jobs on downtown trips:



Legend

- Primary downtown parking zones
- Other study area parking zones
- Parking lots

Year: Parking surpluses and deficits

2010: #
2015: #
2020: #
2025: #

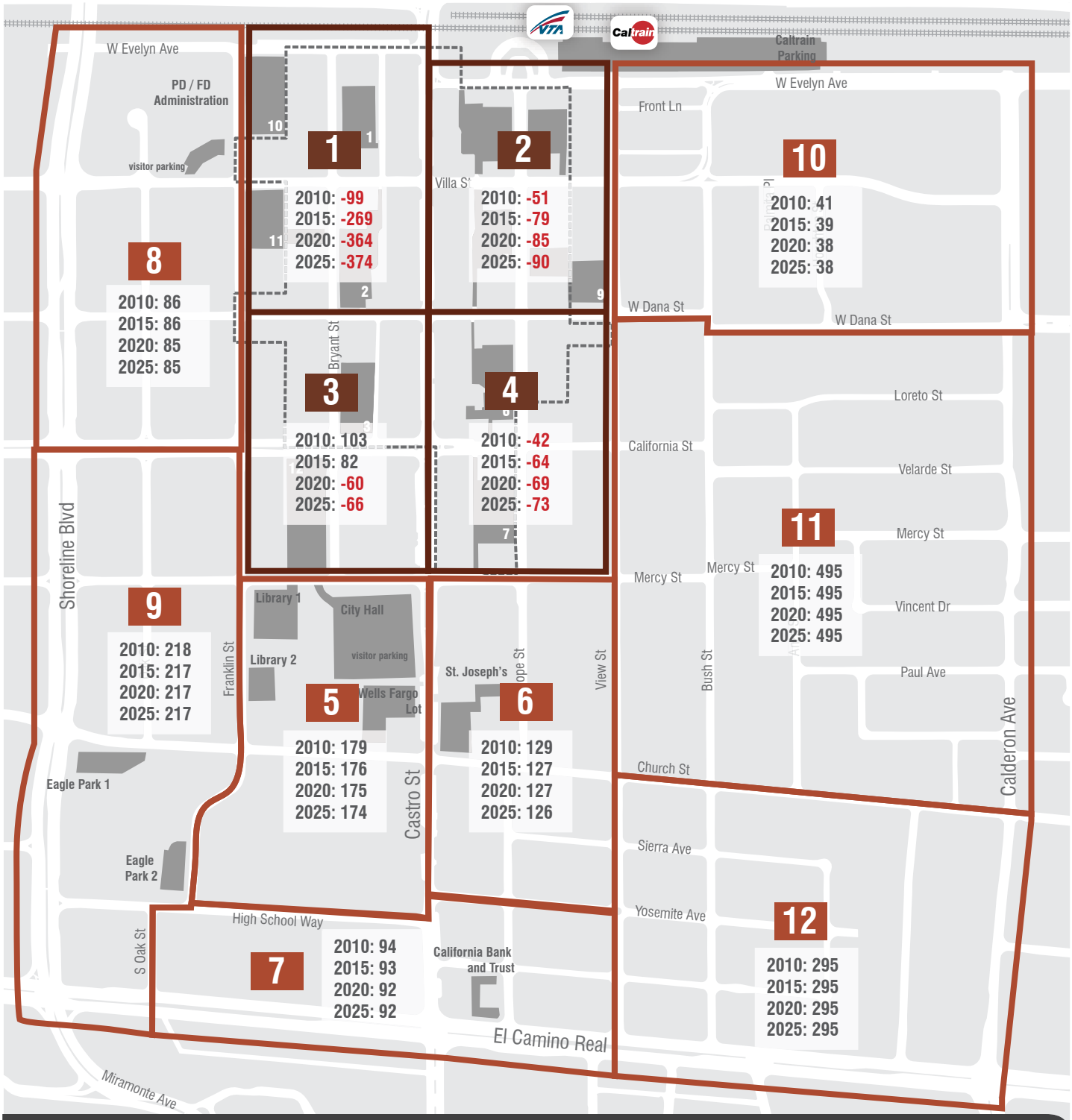
- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

WilburSmith ASSOCIATES

Figure 2.2.1 Parking Surpluses and Deficits, Thursday Midday Peak



Legend

- Primary downtown parking zones
- Other study area parking zones
- Parking lots

Year: Parking surpluses and deficits

2010: #
2015: #
2020: #
2025: #

- Parking district boundary
- Caltrain station
- VTA station

NORTH

500 1000 FEET

Figure 2.2.2 Parking Surpluses and Deficits, Friday Evening Peak

- During the Thursday midday parking occupancy peak, 2% of all new employees within the City's sphere of influence are assumed to travel to the downtown (using the same midday mode split defined earlier)
- During the Friday evening parking occupancy peak, 1% of all new residents within the City's sphere of influence are assumed to travel to the downtown (using the evening mode split defined earlier)

Demand Assumptions- specific development related growth:

Beyond the general growth in downtown trips projected above, specific changes in parking demand are assumed as the result of anticipated developments in the downtown. Increases in parking demand related to specific developments are assigned directly to the Zones in which those development s are planned. Based on information from the City's Planning Department, the model assumes that planned office developments equivalent to 83,450 sf will be constructed in Zone 1 between 2010 and 2015. This new construction will be located within the City's Parking Maintenance Assessment District (PMAD) and under the Downtown Precise Plan, and it is thus eligible to pay parking in lieu fees to satisfy a portion of its off-street parking requirement. Collectively the City's Planning Department estimates that this development will satisfy a 121 spaces of its parking requirement through payment of parking in-lieu fees, increasing parking demand in Zone 1 with no immediate commensurate increase in supply. Since all the development is office buildings, it is assumed that in-lieu spaces will result in increased parking demand on the public parking supply at a one to one ratio during the Thursday midday peak period. During the Friday evening peak, however, it is assumed that only 10% of the in-lieu spaces will translate into actual parking demand. Using a rate of 3 jobs per 1,000 square feet (sf) it was estimated that these two developments will generate a combined 250 jobs. These 250 jobs were netted out of the background job growth described above to avoid double counting.

A variety of other residential and office developments are also anticipated to occur in and around the downtown. These developments include the Prometheus project, the large multi-family residential development planned for the site of the Minton lumberyard along West Evelyn Avenue to the southeast of the downtown. All of these developments, including the Prometheus project, fall outside of the PMAD and are not eligible to satisfy their parking requirements via in-lieu fees. These developments are thus responsible for accommodating all of the parking demand they are anticipated to generate through the provision of private parking as mandated in the City's system of zoning requirements. Because of this, all estimated jobs and residents related to these developments have been incorporated into the background growth described above rather than included in the model as individual sources of demand. While it might be argued that these developments are located closer to the downtown and their residents and employees are less likely to drive, the residents and employees of these developments will travel to the downtown more frequently and even if they are less likely to drive will still have some impact on the overall dynamic parking demand.

Overflow parking from Caltrain is another source of parking demand that may shift in the future and have impacts on parking in and around the downtown. Currently, the parking lot at the downtown Mountain View Caltrain/JPB lot is at or near capacity for much of the day. Projecting parking demand changes at the Caltrain lot is complicated, however, by the future outlook of that transit agency. Over the past several years, Caltrain has cut service from a high of 98 trains per day to the current level of 86 trains per day. However, even with the reduced overall schedule, Caltrain is still operating the same level of peak service, which is the primary determinant of station parking demand. Caltrain's longer-term financial outlook remains uncertain and efforts to identify a new source of operating funding are

underway. Irrespective of the current fiscal situation, an important consideration in evaluating the parking situation at the Caltrain/JPB lot at the Mountain View Transit Center is the Caltrain Comprehensive Access Policy (adopted in May 2010) which encourages other modes of access as ridership grows, such as pedestrian, bicycle and transit access to and from stations. Caltrain and VTA also encourage consideration of shared parking arrangements, as Caltrain parking demand occurs primarily from 6:00am to 6:00pm on weekdays, which may complement demand patterns for other users of the downtown area. Given this consideration, the demand model does not attempt to directly model future spillover from Caltrain/JPB facilities beyond the identification of the known problem that already exists.

2015 Analysis Summary:

Table 2.2.1 presents the outcome and resultant parking surpluses and deficits on a zone by zone basis for the entire downtown study area. These projections include changes related to specific sources of new demand (developments with anticipated in-lieu parking needs), reductions in supply (the removal of surface parking lots), and general increases in background demand related to changes in the commercial vacancy rate along with citywide growth in employment and population.

Table 2.2.1: 2015 Projected Parking Supply, Demand, and Surplus/Deficits

Zone	Supply		Demand				Surpluses & Deficits nominal		aggressive	
	Total	5 yr Δ	Thur	5 yr Δ	Fri	5 yr Δ	Thur	Fri	Thur	Fri
Zone 1	748	-127	944	162	905	62	-308	-269	-282	-243
Zone 2	495	0	462	23	500	28	-41	-79	-25	-63
Zone 3	748	0	443	14	554	21	193	82	221	110
Zone 4	382	0	346	17	389	22	-21	-64	-12	-54
16-block subtotal	**2373**	**-127**	**2195**	**216**	**2347**	**132**	**-178**	**-330**	**-97**	**-250**
Zone 5	442	0	339	4	200	3	36	176	52	191
Zone 6	263	0	127	2	96	1	97	127	97	127
Zone 7	213	0	141	2	88	1	40	93	40	93
Zone 8	245	0	97	0	123	1	111	86	112	87
Zone 9	383	0	131	1	109	1	195	217	197	219
Zone 10	270	0	179	1	191	2	50	39	50	39
Zone 11	875	0	160	0	249	0	584	495	584	495
Zone 12	478	0	91	0	111	0	315	295	315	295

As the table indicates, Zone 1 is projected to be highly impacted, with a 127 space reduction in supply coupled with a projected demand increase of 162 spaces, primarily driven by in-lieu parking. Demand increases less during the Friday evening peak in Zone 1 since it is assumed that the in-lieu parking used by the new office developments will be utilized at a much lower rate. Supply is constant in other downtown zones with modest demand increases driven by assumed background growth. In the 16-block core downtown, increases in demand coupled with the loss of lot 10 exacerbate existing parking deficiencies and mean that the downtown runs a parking deficit that ranges between 97 and 330 spaces depending on the time of day target capacity level assumed.

2020 Model Year

Supply Assumptions

The model assumes that Lot 11 (located in Zone 1) and Lot 12 (located in Zone 3) will both be developed at some point between 2015 and 2020. This means that the 99 spaces of public parking currently located on Lot 11 and the 160 spaces located on Lot 12 will cease to be part of the downtown supply by the 2020 analysis year, for a total loss of 259 spaces.

Demand Assumptions- downtown wide growth:

It is assumed that the general level of demand for parking in the downtown study area will continue to experience background growth between 2015 and 2020, primarily due to anticipated increases in residents and jobs within the City of Mountain View's sphere of influence. The growth in downtown parking demand resulting from these changes is assumed to be proportionally distributed among all downtown zones.

For these baseline projections, the model assumes that the commercial vacancy rate will hold constant at 5% between 2015 and 2020. This means there is no direct assumption of increased commercial activity in the downtown related to changes in the vacancy rate. The model does, however, assume that residential and employment growth in the City's sphere of influence will continue to result in more trips into the downtown and a higher demand for parking. ABAG projects that 4,200 new residents will be added to the City of Mountain View's sphere of influence between 2015 and 2020 and the same assumption is used that approximately 1% of these new residents will make trips to the downtown during the Friday evening peak. Similarly, ABAG projects an increase in employment of 1,710 new jobs within the sphere of influence. There is no netting out of downtown jobs assumed and new employees are modeled as traveling to the downtown during the Thursday midday peak at the rate of 2%.

Demand Assumptions- specific development related growth:

No specific developments using in-lieu fees to satisfy their parking requirements are assumed between 2015 and 2020.

2020 Analysis Summary:

Table 2.2.2 presents the outcome and resultant parking surpluses and deficits on a zone by zone basis for the entire downtown study area.

Table 2.2.2: 2020 Projected Parking Supply, Demand, and Surplus

Zone	Supply		Demand				Surpluses & Deficits nominal		aggressive	
	Total	5 yr Δ	Thur	5 yr Δ	Fri	5 yr Δ	Thur	Fri	Thur	Fri
Zone 1	649	-99	952	8	916	11	-401	-364	-380	-343
Zone 2	495	0	466	4	506	6	-45	-85	-29	-68
Zone 3	588	-160	446	4	560	6	53	-60	73	-40
Zone 4	382	0	349	3	393	5	-25	-69	-15	-59
16-block subtotal	**2114**	**-259**	**2214**	**19**	**2375**	**27**	**-417**	**-578**	**-350**	**-511**
Zone 5	442	0	340	1	201	1	35	175	50	190
Zone 6	263	0	127	0	97	0	97	127	97	127
Zone 7	213	0	141	1	89	0	40	92	40	92
Zone 8	245	0	98	0	123	0	111	85	112	87
Zone 9	383	0	131	0	109	0	195	217	197	219
Zone 10	270	0	180	0	191	1	50	38	50	38
Zone 11	875	0	160	0	249	0	584	495	584	495
Zone 12	478	0	91	0	111	0	315	295	315	295

As Table 2.2.2 indicates, both Zone 1 and Zone 4 are projected to be heavily impacted in 2020 due to the loss of Lots 11 and 12. Since commercial vacancy rates are assumed to be constant, general parking demand is only projected to increase slightly between 2015 and 2020. Nonetheless, the loss of 259 parking spaces in the 16 block core area will significantly worsen existing parking deficits. The core downtown in 2020 is thus projected to run a parking deficit ranging from 350 to 578 spaces depending on the assumed target capacity.

2025 Model Year

Supply Assumptions

No supply changes are assumed for the 2025 model year in the baseline model scenario.

Demand Assumptions- downtown wide growth:

It is assumed that the general level of demand for parking in the downtown will continue to experience background growth between 2020 and 2025, again, primarily due to anticipated increases in residents and jobs within the City of Mountain View's sphere of influence. The growth in downtown parking demand resulting from these changes is assumed to be proportionally distributed among all downtown zones.

For these baseline projections, the model again assumes that the commercial vacancy rate will hold constant at 5% between 2020 and 2025. This means there is no direct assumption of increased commercial activity in the downtown related to changes in the vacancy rate. The model does, however, assume that residential and employment growth in the City's sphere of influence will continue to result in more trips into the downtown and a higher demand for parking. ABAG projects reduced residential growth between 2020 and 2025, with 3,900 new residents added to the City of Mountain View's sphere of influence. The assumption that approximately 1% of these new residents will make trips to the downtown during the Friday evening peak is held constant. ABAG projects a substantial increase in employment for 2025 with 5,800 new jobs added within the sphere of influence. There is no netting out of downtown jobs assumed and new employees are modeled as traveling to the downtown during the Thursday midday peak at the rate of 2%.

Demand Assumptions- specific development related growth:

No specific developments using in-lieu fees to satisfy their parking requirements are assumed.

Table 2.2.3: 2025 Projected Parking Supply, Demand, and Surplus

Zone	Supply		Demand				Surpluses & Deficits			
							nominal		aggressive	
	Total	5 yr Δ	Thur	5 yr Δ	Fri	5 yr Δ	Thur	Fri	Thur	Fri
Zone 1	649	0	980	28	925	10	-429	-374	-408	-353
Zone 2	495	0	480	14	511	5	-59	-90	-42	-74
Zone 3	588	0	460	13	566	6	40	-66	60	-46
Zone 4	382	0	360	10	397	4	-35	-73	-25	-63
16-block subtotal	**2114**	**0**	**2280**	**66**	**2400**	**25**	**-483**	**-603**	**-415**	**-536**
Zone 5	442	0	345	4	202	1	31	174	46	189
Zone 6	263	0	129	2	97	0	95	126	95	126
Zone 7	213	0	143	2	89	0	38	92	38	92
Zone 8	245	0	98	0	123	0	110	85	112	86
Zone 9	383	0	131	1	109	0	194	217	197	219
Zone 10	270	0	181	1	192	1	48	38	48	38
Zone 11	875	0	160	0	249	0	584	495	584	495
Zone 12	478	0	91	0	111	0	315	295	315	295

As Table 2.2.3 shows, no geographically disproportionate parking impacts are projected for the 2020 to 2025 period. Commercial vacancy rates are assumed to be constant, but general parking demand increases modestly between 2020 and 2025 primarily because of ABAG's projection of significant employment growth. Given these projections, parking deficits in the core downtown in 2025 are thus projected to worsen slightly and will range from 415 to 603 spaces depending on the assumed target capacity.

It should be reiterated here that the model is developed and executed in a way where the parking surpluses and deficits displayed are an ideal or target numbers intended to reflect the true parking demand for a geographic area. Zones 5 through 12 are shown accruing only a small percentage of the assumed growth in demand for non-residential downtown parking because there are limited non-residential uses in those zones. That said, as parking deficits begin to pile up within the 16 block core of the downtown, spillover into adjoining areas will likely worsen. Similarly, parking facilities will fill up to 100% occupancy levels (as they sometimes do currently). Overfull lots and blockfaces will, however, create excessive "cruising" traffic in the downtown and will certainly create visitor frustration.

Alternative Demand Scenarios

As previously discussed, the projections detailed above represent a "baseline" estimate of parking demand. This estimate is predicated on a variety of assumptions including changes in the commercial vacancy rate, population and job growth, and assumptions regarding how visitors travel to the downtown and how parking is managed. The following report presents a range of alternative projections that show how parking demand might change given a varying set of input assumptions. The analysis is presented in a matrix form and focuses on the percentage change in demand in the core-downtown area based on different combinations of the variables described below. These alternative scenarios should not be viewed as detailed projections based on specific policy packages. Rather, they are intended to broadly encompass a realistic range of variation within key variables that impact parking demand and thus provide a high and low boundary for how future parking demand in the downtown could shift.

- Economic Growth: Taken on its own, economic growth in the downtown will have the broad impact of increasing the demand for parking. Within the parking demand model, current and projected commercial vacancy rates are used as a proxy for economic activity in the downtown. In the default scenario, the model assumes modest growth and uses a vacancy rate of 7.7% for the current year and 5% in future years. Two alternative scenarios are evaluated:
    - High growth: The vacancy rate falls to 5% in 2015, 3.5% in 2020, and 2.5% in 2025
    - No growth: The vacancy rate holds constant at 7.7% for all future years
- Mode Share: Changes in how people travel to the downtown have a direct impact on parking demand. If a greater proportion of visitors drive, parking demand will increase whereas a shift towards walking, transit or other alternative modes will reduce parking pressures. Shifting mode choice can be achieved through City policies encouraging the use of alternative modes and investments in pedestrian, bicycle, and transit infrastructure. Parking policies that price or limit the availability of parking will also have the impact of shifting downtown visitors to alternative modes, particularly for employees and commuters. The impacts of two alternative mode-split scenarios are evaluated:

- Shift away from driving: The mode share for auto trips to the downtown drops by 7.5% over the next 15 years in 2.5% increments. 5% of this reduction is assumed to be related to the introduction of parking pricing and other parking policies that restrict employee and commuter driving (such as residential permit parking in neighborhood areas). 2.5% is assumed to relate to policies and programs encouraging the use of transit and alternative modes.
- Shift away from transit: In this scenario, the percentage of people driving is assumed to increase by 2% as transit service provided to by VTA and Caltrain is substantially cut back. This reduction is modeled as occurring primarily prior to 2015, with a smaller reduction between 2015 and 2020.

Table 2.2.4 shows how the different factors described above interact to change projected demand in the 16-block core area during the Thursday midday peak relative to the default economic and mode split assumptions used in the primary modeling effort (changes in the Friday evening peak are comparable)

Table 2.2.4: Projected Impact on Demand of Alternative Assumptions- Thursday Midday Demand

% increase in demand above corresponding "Base Case" demand			Economic Growth Assumption		
			Modest Growth*	**High Growth**	**No Growth**
Mode Split Assumption	**No Change***	2015	0%	0.0%	-2.5%
		2020	0%	1.5%	-2.4%
		2025	0%	2.4%	-2.4%
	Decreased Transit Share	2015	1.8%	1.8%	-0.7%
		2020	2.5%	4.0%	-0.1%
		2025	2.5%	5.0%	0.0%
	Decreased Driving Share	2015	-1.2%	-1.2%	-3.7%
		2020	-4.4%	-3.0%	-6.8%
		2025	-7.6%	-5.4%	-9.8%

*"Base Case" Assumption

The table reveals that projected future parking demand will be lowest in a condition when the driving share to downtown is decreased and the downtown economy is performing poorly. Under these conditions the magnitude of future parking demand increases is reduced by up to 9.8% in year 2025. Such a situation is not desirable since it is predicted on the assumption of stagnant economic growth in the Downtown. The table does suggest, however, that the magnitude of future increases in parking

demand can be reduced through mode shift changes even when the economy is experiencing an optimistic level of growth.

Similarly, the highest levels of parking demand are projected for conditions where the economy is performing well but transit usage has declined. Under these conditions parking demand in the core downtown is anticipated to grow up to 5.0% above the default projected increase.

It is important to note, that in all future scenarios, regardless of assumptions, the core downtown is still projected to have a significant parking deficit for all future years. As discussed earlier, this is because the parking deficits are primarily driving by supply reductions (development on the City's temporary parking lots) and demand increases from in-lieu parking assumed for new development. Assumptions related to mode split and the general downtown economy will not impact these contributors to the parking deficit assuming that the development and construction of projects still proceeds.

Although all alternative scenarios point towards future parking deficits, the magnitude of these deficits will be impacted by future changes in the downtown economy and the choice of modes visitors to the downtown make. In the highest growth scenario (lower transit usage coupled with high economic growth) the anticipated core area parking deficit during the midday peak will reach 595 spaces in 2025 (112 spaces more than the base case scenario and 336 spaces more than the lowest demand scenario). If economic growth assumptions are held constant and only mode share impacts are considered the span in anticipated parking deficits ranges from a high of 539 (56 above the default level) to a low of 309 (174 spaces below the default level). Achieving this kind of mode split in 15 years is would be an ambitious goal for the City but the above analysis indicates that doing so has the potential to significantly reduce projected parking deficits in the downtown, potentially reducing the need for costly new supply construction.

Task 3: Parking Programs- Details and Finances

Previous sections of this report have described the critical role that parking plays in providing access to downtown Mountain View and have described the anticipated future growth in parking demand over the next 15 years. Task 3 of the Downtown Mountain View Parking Study includes a variety of loosely related analyses that focus in on the details and financial dimensions of specific parking management programs. This includes an analysis of several existing parking programs and process as well as a consideration of potential future changes in the parking management system. Much of the work in Task 3 is focused on analyzing and quantifying the financial and economic dimensions of parking programs. Parking has the potential to generate substantial amounts of revenue for the City through pricing, permit sales, and citations, but maintaining and managing parking is also a very costly proposition. Understanding and quantifying the finical dimensions of different parking programs is critical to making informed policy choices. The following briefly describes the different components of Task 3 and summarizes their key findings:

Task 3.1 Analysis of the Parking Maintenance Assessment District:

Task 3.1 included a review of current and historical materials and reports related to downtown Mountain View's Parking Maintenance Assessment District (PMAD).

- The PMAD has existed in its current form since 1979 and collects annual assessment totaling approximately $158,000 from property owners within the district. These assessments are combined with other revenue sources to pay for the maintenance of the downtown's parking lots and structures.
- The assessment was increased to its current level of $158,000 in fiscal year 1997 and has been held constant since then due to the stipulations of Proposition 218. Assessments currently cover approximately half of the PMAD's expenditures. As maintenance costs increase in the future this proportion will decrease assuming that the assessment continues to be held constant.
- There are several approaches that could be pursued to modify, expand, or add to the PMAD. These include:
    - Expanding the PMAD Boundaries.
    - Increasing the PMAD Assessment to more adequately cover existing and future PMAD costs.
    - Overlaying a new Parking District on the PMAD.
    - Creating a totally new Parking District.
- All of the above options carry a number of risks and complications and are discussed in detail in Task 3.1

Task 3.2 Revenue and Expenditure Analysis of Current and Potential Parking Programs

Task 3.2 involves an extensive analysis of current parking costs and revenues and a projection of those costs and revenues over the next 30 years. The financial dimension of potential residential permit programs and parking pricing in the downtown are also analyzed over a 30 year timeframe (assuming a

hypothetical implementation over the next 1 to 6 years). The analysis in Task 3.2 is quite involved but yields a number of critical findings:

- For Fiscal Year 2009-2010, PMAD revenues were $430,800, operational expenditures were $306,100 and the non-operational amount dedicated towards future maintenance was $40,000. The overall district had a positive balance of $84,700. Based on the recommendation of the Finance Department, 2009-2010 audited actuals have been used for all base year calculations involving the PMAD. General downtown parking revenue sources (not included in the PMAD budget) included an estimated $128,670 in parking citation revenue collected in the downtown. Downtown parking related expenses outside of the PMAD budget in 2011 included an estimated $72,926 in enforcement costs and an additional $11,700 in citation processing fees. General parking maintenance expenses in the downtown (outside of the PMAD) also included some $353,900 in sweeping costs, signage maintenance, and relevant portions of the Castro Street Maintenance Program. If all parking revenues and expenses are comingled, parking in the downtown currently has an estimated net deficit of $225,156 annually.
- If current parking revenues and expenditures are projected forward over the next 30 years with no other changes assumed, the size of the overall deficit will continue to grow. The base case analysis projects that the PMAD's operating budget surplus will remain positive through 2040 but will decline slightly each year. This occurs because the PMAD's assessment revenue is assumed to be held at a constant level even as operating expenses are projected to increase steadily in future years. Additionally, it is important to note that the amount indicated for the PMAD's operating budget is held at a constant annual $40,000 and will not necessarily be sufficient to cover the increased costs of major parking structure maintenance and replacement that may be required over the next 30 years. The City classifies these expenditures as future maintenance costs and does not put aside funding as part of the PMAD's annual operating budget. The $40,000 annual amount expressed in the model was agreed upon based on discussions with City staff but is not intended to represent or accommodate the actual likely costs of future capital needs. General (non-PMAD) parking operations in the downtown will continue to operate at a substantial deficit in future years, largely driven by maintenance costs. Parking enforcement activities, when viewed in isolation, do generate a surplus of revenue (an estimated $44,044 in fiscal year 2011). Parking enforcement levels and citation rates in Mountain View are relatively low, however, and any revenue surplus generated by these activities is insufficient to offset the costs of parking maintenance in the downtown. Adjusting enforcement strategies and practices should be a major consideration as part of any new parking management programs adopted in the downtown.
- It is also important to note that sensitivity analyses of the base case scenario were conducted using a variety of different input data and assumptions suggested by City staff. These analyses revealed that although the PMAD appears to retain a positive balance through 2041 using the agreed upon inputs and assumptions, its finances are not necessarily on firm footing and are susceptible to fluctuation based the data used. For example, an analysis was conducted using a more pessimistic set of assumptions about revenue escalation and the adopted PMAD budget

for 2010-2011 rather than the 2009-2010 actuals. This analysis suggested that under these circumstances the PMAD could become (slightly) revenue negative as early as FY 2013-2014.

- With the base case established, an alternative financial scenario was developed that examined the revenue and cost implications of initiating a small residential permit parking (RPP) program in the neighborhood roughly bordered by West Evelyn Avenue, View Street, Calderon Avenue, and Mercy Street. The analysis revealed that although the program would generate revenues through permit sales and increased citations it would not be revenue neutral and would require a subsidy of roughly $40,000 a year to operate. Program initiation costs were estimated to be some $113,261 in the assumed program initiation year of 2012.
- A second alternative financial scenario was developed that examined a more complex residential permit program paired with a comprehensive pricing (metering) program in the downtown (with all components of both programs phased between 2012 and 2016.) The expanded RPP program modeled in this scenario is expected to operate at a deficit but this loss will be more than offset by the increased revenue generated by the parking pricing program (both directly and indirectly through citations). In fiscal year 2013, when the first phase of the pricing program was modeled as becoming active, some $417,861 in new revenue is projected to be generated by the meters and an additional $246,592 in citation revenue is anticipated to result from increased parking enforcement associated with the meter program. Combined revenues from metering and new citations are projected to rise to $1,512,033 when the full parking pricing program is implemented in 2016. Although pricing parking would generate a large sum of revenue, costs will also increase substantially. Annual operational costs for the program were projected to be $287,630 in the first phase and $864,801 in the second phase for the meter program alone (excluding existing and RPP program expenses). Program initiation costs would also be substantial, amounting to $113,261 in 2012 for the first phase of the RPP program, $693,357 in 2013 for the initiation of the first phase of the pricing program, $219,867 in 2015 for the second phase of the RPP program, and $1,185,506 in 2016 for the final phase of the pricing program. All told, however, the net revenue effect of pricing and increased enforcement will be positive with an estimated $291,351 surplus generated in 2017 once the program stabilizes and all initiation costs have been accounted for. This surplus increases substantially as meter rates rise over the 30 year period of analysis.

Task 3.3- A Policy Focused analysis of Pricing and Residential Permit Parking

Task 3.3 includes two pieces of analysis. The first considers the impacts of parking pricing on commercial districts while the second describes residential parking programs in more detail and discusses how they have been implemented in a number of Northern California cities. Key highlights of the analysis include:

Parking Pricing

- Reactions to the introduction of parking pricing in commercial districts and downtown vary substantially based on several factors. In general, pricing parking or increasing parking costs will cause shoppers, employees, and commuters to change their parking behavior. Drivers will seek out free or lower priced parking alternatives if they are available but will not necessarily divert

their trips entirely. The presence of competing shopping districts with free parking is a significant factor in determining whether shoppers will actually divert trips in response to paid parking.

- Shoppers are less sensitive to pricing than commuters, employees, and other long-term parkers who utilize parking on a consistent daily basis for long stretches of time and are thus more economically impacted by pricing.
- Parking pricing can improve the availability of parking, and particularly shorter term parking in commercial districts and downtowns. In congested areas this can have a positive economic impact if it improves accessibility for shoppers and makes it easier for them to find parking quickly near their destination.
- Detailed research quantifying the economic impacts of parking pricing in downtown is varied and findings are highly dependent on the location studied. The results of a variety of studies are discussed in section 3.3.

Residential Permit Parking

- Residential Permit Parking programs are a commonly used parking management tool for limiting parking spillover impacts in residential neighborhoods. Many Bay Area and Northern California cities use these programs although all tend to differ slightly in how they are implemented and administered
- Most (but not all) cities spell out the requirements for RPP district formation in their ordinance and assume that the process will be initiated by the residents themselves. Typical requirements for RPP initiation include a standard of evidence proving that the neighborhood is impacted by non-resident parking and documentation of agreement or interest in the program by a majority of neighborhood residents.
- Time limits and enforcement hours vary widely by program and should be developed in a way that is as tailored as possible to limiting the specific undesirable parking behaviors that are the purpose of the program. Most programs are developed in a way where non-permit holders are subject to time limits, but some programs prohibit non-permit parking entirely. Virtually all RPP programs include some form of temporary guest or visitor pass.
- Permit fees vary substantially, and of 12 cities reviewed permit prices ranged between free and $150 per year. Most cities, however, charge between $20 and $40 a year for permits.
- Not all cities contacted were able to speak to the cost-neutrality of their programs, but in general it appears that RPP programs are, as a rule, not revenue neutral. Even when citations are taken into consideration, most cities examined found that their permit programs required at least a small general fund subsidy.

Task 3.4- Analysis of Parking Supply Options

Task 3.4 includes analysis developed by International Parking Design considering costs and configuration options for building a new parking structure or a parking structure plus mixed use development on existing surface lots 4, 5, and 6 in the downtown. Their analysis yielded the following conclusions:

- Parking lots 4, 5, and 6 are relatively similar in size and shape and for the planning-level costing and design purposes of this analysis their potential to accommodate a parking structure appears to be relatively similar. Given this, International Parking Design focused their analysis on examining as wide as possible a range of parking configurations on Lot 4.
- Free standing parking structure options analyzed were able to accommodate some 368-467 total spaces on lot 4 or 280 to 379 net new spaces once the existing 88 spaces on Lot 4 are

accounted for. Total construction costs for these options range between $8.7 million and $11.3 million, not including soft costs. (The final, all inclusive cost of the newer California Street parking structure was $18.2 million at the time of completion).

- Options for public parking combined with retail included 155 to 166 new spaces or 67 to 78 net new spaces. The total construction cost for the parking component of these options ranges from $4.7 million to $5.1 million
- Construction costs per net new space vary slightly but are roughly $30,000 for all free standing parking structure options considered. Construction costs per net new space in a mixed retail development are much higher and range from $60,000 to $76,000.

3.1: Analysis of the Maintenance Assessment District

The following report section discusses the history of the downtown Mountain View Parking Maintenance Assessment District (PMAD) and describes possible approaches to modifying, expanding, or otherwise altering the way in which parking maintenance and improvements in the downtown are funded. The advantages and risks of several different approaches are weighed and summarized.

The Formation and Status of the District

Early History

Parking assessments have been used in Downtown Mountain View for a long time as a means to fund the development of off-street parking and to cover the operations/maintenance costs of the facilities. Over the years the City has formed two parking assessment districts and a parking maintenance assessment district which resulted in the system of public off-street parking facilities that provide parking for downtown employees, residents and visitors. No direct documentation was found for the original district – Parking District No. 1. However the resolutions forming Parking District No. 2, which were adopted in 1959, indicate that the parking facilities and the outstanding bond indebtedness from Parking District No. 1 would be transferred to the new district. It also is likely that the boundaries of Parking District No. 1 were similar to those of Parking District No. 2. Parking District No. 2 included parking lots 1 – 7 and the Bryant-Dana Street lot. The district operated through an ad-valorem property tax assessment. The standard proceedings for setting up a parking assessment district in the State of California were followed. The district was formed through the preparation of an engineer's report which documented the projects to be built, their costs and the area of the downtown that would benefit from the projects. The City then advertised its intent to form the district and invited those that were opposed to indicate so at a formal protest hearing. By law, individuals representing over 50% of the properties would have to state that they were opposed to the formation of the district, or the district would be approved. City records indicated that there were no protest votes and the district was formed.

The Downtown Parking Maintenance Assessment District

In 1979 there were concerns about the City's ability to cover the operating and maintenance costs of the parking lot in District No. 2, given the passage of proposition 13 and a pending deficit in the District's fund. The City moved to form the Downtown Parking Maintenance Assessment District (PMAD) which was intended to pay off the deficit from District No. 2 and to cover the ongoing costs of operating and maintaining the parking facilities. The City followed the same procedure as with the formation of Parking District No. 2. An engineer's report was prepared; property owners were notified and invited to the public hearing, and the opportunity to protest the formation of the PMAD was offered either in written form or by a verbal statement at the protest hearing. The PMAD assessments were to be based on a two part assessment formula. The first part of the assessment was based on the number of parking spaces required given the existing land uses on each parcel. This represented 75% of the assessment. The remaining 25% was based on the size of the parcel as a percentage of the total size of all the parcels in the district. The boundaries of the PMAD were the same as those of Parking District No. 2.

The formation of the district proceeded and in the first year the assessment totaled about $107,000 of which $29,000 was the carryover deficit from Parking District No. 2. Each year the estimated budget for

the operations and maintenance costs of the PMAD were prepared and assessed to the property owners using the two part assessment formula. In 1981 some parcels that were rezoned from commercial to residential along Hope Street were "detached" from the district. There is no evidence that any parcels have ever been added or annexed to the PMAD.

From 1979 to 1987 the annual assessment was held at $50,000, with the rest of the cost being covered from District revenues. In 1988 the assessment was increased to nearly $70,000 and rose to nearly $75,000 by 1995. Finally, in fiscal year 1996-97 the assessment was increased to $160,000 per year. This was the last time the assessment was increased.

Proposition 218

The passage of California Proposition 218 in 1996 had a major impact on assessment districts throughout the state. The tenet of Proposition 218 was that assessments needed the approval of the property owners through an actual voting process where over 50% of the property owners vote in support of the district, with their vote being weighted by the assessed valuation of their property. Proposition 218 also required that any existing assessment districts be abolished unless they were "exempt" or met certain special requirements. In order to be exempt the assessment needed to satisfy the following requirements:

- The assessment was previously approved by voters--or by all the property owners at the time the assessment was created.
- All of the assessment proceeds are pledged to bond repayment.
- All the assessment proceeds are used to pay for sidewalks, streets, sewers, water, flood control, drainage systems, or "vector control" (such as mosquito control).

The PMAD did not meet any of these requirements. The City had to take the steps required in Proposition 218 to bring the PMAD into compliance. This requires the preparation of an annual engineer's report that calculates the amount of the assessment and certifies that the assessments are for special benefits received by the property owners in the PMAD. Specials benefits are those that go beyond the general benefits received by all property owners in the city. Since the parking lots were built to provide a benefit to those in the PMAD, they represent special benefits not experienced by other property owners. The City also had to amend the PMAD to include publicly owned properties, so that now the City must assess itself and pay a share of the PMAD costs. Since 1996 the City opted not to increase the amount of the assessment. The concern was that if the amount was increased that under the requirements of Proposition 218 the City would need to conduct a voting process and obtain the required 50% approval of the property owners with their votes weighted by the amount of the assessed valuation of their properties. Had the City opted to conduct such a vote, then the amount of the assessment could have been increased to keep with increases in the net costs of the PMAD. However, putting PMAD up for a vote could also mean that the district would be dissolved if the required majority approval was not obtained.

Current Status

For fiscal year 2009-10, the PMAD assessment was approximately $158,000. There are about 220 property owners involved. The audited expenses for fiscal year 2009-2010 were $306,100. Those expenses not covered by the PMAD assessments were covered by other revenues such as PMAD parking permit fees, property taxes, and various other minor revenue sources. However, if the City had the ability to increase the PMAD assessment some of those other revenues could potentially be used for

other purposes. There is also the concern that PMAD costs are increasing at a rate faster than the assessment and over the coming years the positive balance the program currently experiences will dwindle (an issue analyzed and quantified in the next section of this report).

Future Options

A number of options for addressing the long term needs of the PMAD were examined. Before proceeding with any of these options it would be essential for the City to obtain an independent legal review. The options considered include:

1. Expanding the PMAD Boundaries.
2. Increasing the PMAD Assessment to cover more adequately existing and future PMAD costs.
3. Overlaying a new Parking District on the PMAD.
4. Creating a totally new Parking District.

Expanding the PMAD District

It would make sense to change the PMAD boundaries to conform to those of the somewhat larger Downtown Revitalization Area. It could be argued that the parking lots which are part of the PMAD actually benefit those properties outside of the PMAD, but within the revitalization area. The City has even been approached by property owners outside of PMAD, requesting that they be allowed to participate in the PMAD parking permit program. However, it is clear that the outright expansion of the PMAD to conform with the revitalization area boundaries would require a vote per the requirements of Proposition 218. This is because whenever new properties are to be assessed Proposition 218 requires that a formal vote be conducted.

A second approach to expanding the PMAD would be to annex those parcels where the property owners are willing to "buy-in" to the PMAD. The buy-in concept would require the payment of a fee which represents the equivalent value of all the payments the existing PMAD property owners have made through the life of the PMAD. Another approach would be to have the property owners pay the City's in-lieu parking fee for the deficit between the number of spaces required for the property by code versus the number of on-site parking spaces actually provided. The new property annexed into the PMAD would also have to pay the annual assessment. Adding properties to the PMAD would have a long term benefit only if the City were to increase the total amount of the assessment so that the existing property owners would still not pay more than $158,000 and the new property owners would pay an incremental additional amount based on the assessment formula. The City would also receive the increased revenue from any additional parking permits sold which would benefit the PMAD. If this incremental approach were followed it is possible that the City could proceed with such annexations without triggering the need for a property owner vote. This is because existing property owners would not be asked to pay any more than before, and the new property owners would be "voting" themselves into the district, meeting the voting requirements of Proposition 218 for new assessments. The buy-in fee could prove to be a major obstacle. However, it may be necessary to assure that there would not be a challenge to the annexation from the existing property owners.

Another annexation option would be to require properties located outside of the PMAD but in the revitalization area to buy-in to the district as an offset of the parking impacts of any new development. This would be similar to the City's in-lieu fee program.

Increasing the PMAD Assessment

Given the history of the PMAD assessments, and the record of the City's actions to avoid bringing PMAD to a property owner vote, it is clear that increasing the assessment would almost certainly require a property owner vote. This creates the risk that a negative vote would essentially abolish the PMAD. However, as time goes on and the costs of operating the PMAD increase, the PMAD assessments will become less and less relevant, making the risks of going to a vote less. The other issue though is that the longer the City holds the assessment constant, the larger the required increase in the assessment will be, making the shock factor of having to ask for the increase much greater.

Overlaying the PMAD

This approach would involve no changes to the PMAD. The property owners in the PMAD would continue to pay the same uniform annual amount. The overlay area could be the same as the PMAD or could cover a larger area such as the revitalization area. The challenge for the City would be to demonstrate that those properties in the overlay zone, and particularly those in the PMAD are receiving a new special parking benefit not already accounted for by the PMAD. This would require the City to implement enhancements to the parking system beyond those which are already part of PMAD. An equitable approach to measuring those benefits to those inside PMAD versus those outside PMAD would have to be found. The overlay would have to receive approval by the majority of the property owners in the overlay zone based on a vote weighted by the assessed valuation of the properties in the zone.

Creating a New Parking Assessment District

There are a number of ways a new parking district could be defined. For example, it could cover all the areas inside the revitalization area but outside the PMAD. The new district could assume the assets and liabilities of the PMAD and essentially roll them over into a new district which could be expanded to cover more of the downtown and could include new parking investments. There is no question that a new district would require a vote by the property owners.

The Challenge of Proposition 218 – Since the passage of Proposition 218 very few assessment districts have been formed. Today most of the new assessment districts are initiated by small groups of property owners who recognize the need to organize to fund public improvements that the cities can no longer afford. To successfully form a new district or modify the PMAD in Downtown Mountain View there will need to be a motivated group of property owners to lead the movement to gain the support of the other property owners. One approach that has been shown to work well is to offer the property owners and/or their tenants the opportunity to actually have a degree of control over the use of the assessments. This approach is similar to a Business Improvement District (BID). A BID has limited powers to manage funds obtained from an assessment on businesses with the understanding that the funds will be used to make enhancements to the business environment in the area.

Conclusions

- Proposition 218 has greatly limited the value of the existing PMAD. In order to expand the PMAD or increase the amount of the assessment to cover the costs of operating and maintaining the parking facilities, the City will have go through the process of conducting a formal vote of property owners to approve the change. This approach has the inherent risk that the property owners could vote against the modified PMAD, which would result in the abolishment of the PMAD altogether.

- It may be possible to annex or add new properties to the PMAD. The key would be to do it in a way that did not impact the parking benefits or the amount of the assessment PAID by current property owners in the PMAD. A reasonable buy-in fee would have to be paid to the PMAD and the new property owners would have to pay the annual assessment. If a property outside the PMAD but within the revitalization area were to redevelop, a condition of approval could be a requirement to join the PMAD.
- Any kind of an overlay district or a new district will require a vote per the stipulations of Proposition 218. Such a vote is unlikely to succeed unless there is a motivated group of downtown property owners or business that would be willing to support a new assessment and to assist in the effort to secure the approval of the required majority. This approach has been used successfully in other cities when the city is willing to give the downtown business interests control over the ways in which the assessment monies are utilized.
- Properties outside of the PMAD have indicated a desire to purchase the permits that allow all day parking in the public off-street facilities downtown. Allowing this to occur would generate additional revenue for the PMAD. It is likely that many of these parkers are already parking in the public off-street facilities, so offering the permits to be sold to those outside the PMAD should not cause a big increase in usage. However, to be fair to those who are in the PMAD, the price of the permits for those outside the district boundary should be set higher than the normal permit price. It may be necessary to notify the property owners within the PMAD of this new program. It will be important that they understand that by increasing the permit revenues the eventual need to increase the assessment will be diminished.

3.2: Revenue and Expenditure Analysis of Current and Potential Parking Programs

The following section reports on the results of a financial modeling effort intended to capture current and future cost and revenue projections related to parking in and around downtown Mountain View. The analysis begins by providing an accounting of all current costs and revenues related to parking in the downtown. These include both the Parking Maintenance Assessment District costs and revenues discussed in section 3.1 as well as the financial implications of other parking activities in and around the downtown that are not captured within the PMAD budget. After establishing this baseline financial picture, costs and revenues are projected forward over a 30 year period assuming a variety of parking management scenarios and programs. Current trends are projected forward as a baseline, but the model also evaluates the financial impact of establishing a residential permit parking program and instituting parking pricing at some facilities in the downtown.

It is critical to emphasize that the costs and revenue projections presented here are dependent on a variety of different assumptions. The City of Mountain View tracks budget items related to the PMAD in detail, but other parking costs presented represent approximate proportions of city-wide totals or estimates based on discussions with City staff. Similarly, estimates of future parking costs are based on an array of assumptions related to future parking demand, program development, and future cost escalation. All assumptions are discussed in detail as relevant portions of the analysis are presented.

Included Revenues and Expenditures

Before presenting data on parking revenues and expenditures it is important to outline more specifically what this analysis is trying to capture and what data elements are not captured. The different scenarios in the following financial accounting were based on the initial data points described below. Unless otherwise indicated here or within the following analysis all data was provided by City staff and was developed for an area equivalent to the entire downtown Study Area (the area bordered by West Evelyn Avenue, Calderon Avenue, El Camino Real and Shoreline Boulevard).

Current Revenues

- All 2009-2010 audited revenues and funds identified in PMAD budget
- An estimate of fiscal year 2011 citation revenues derived within the downtown study area (based on data provided by the Police Department regarding citywide citation revenues for the past 4 years, data on the number of citations issued obtained from the City's 2010 Comprehensive Annual Financial Report, and subsequent discussions with staff)

Future Revenues

- Projections of the revenues and funding sources identified above over a 30 year horizon and modified as appropriate to reflect the effects of any new parking management programs
- Projected revenues derived from the future sale of annual and guest permits as part of a hypothetical residential permit parking program
- Increased citation revenue related to the above hypothetical permit program

- Projected revenues generated by a future, hypothetical on- and off-street parking pricing program

Current Expenditures

- All 2009-2010 audited operating costs identified in PMAD budget
- A $40,000 non-operating contribution towards future maintenance and capital replacement needs at PMAD facilities
- Estimates of ongoing downtown street sweeping costs not captured within the PMAD budget
- Estimates of ongoing downtown street lighting costs not captured within the PMAD budget
- Estimates of ongoing parking signage costs not captured within the PMAD budget
- An estimate of fiscal year 2011 enforcement costs within the downtown study area (based on data provided by the Police department and subsequent discussions with staff)
- Estimates of the portion of the Parks and Forestry Division costs related to the Castro Street Maintenance Program that is not covered by departmental funds transfers in the PMAD budget. Many of the costs included in this item are not direct parking costs but they do represent a special ongoing maintenance program in and around the public right of way in the downtown. Discussion with City staff indicated that it was appropriate to relate these costs conceptually to downtown parking for the purposes of this analysis.

Future Expenditures:

- All of the above expenditures projected over a 30 year horizon and modified as appropriate to reflect the effects of any new parking management programs
- One time personnel and capital costs related to the initiation of a hypothetical residential permit parking program
- Ongoing annual personnel and capital costs related to the operation of a hypothetical residential permit parking program
- One time personnel and capital costs related to the initiation of a downtown on- and off-street pricing program
- Ongoing annual personnel and capital costs related to the initiation of a downtown on- and off-street pricing program

Revenues and Expenditures not Included

Certain downtown parking facilities and costs are not captured in the financial model outlined above. These costs were excluded either because City staff did not think it was conceptually appropriate to track them as a part of the overall cost of parking in downtown Mountain View or because it was not possible to quantify and forecast them reliably within the scope of this project.

Facilities not included:

- Costs and Revenues related to the City Hall Parking garage, the Police / Fire Department lot, and the Eagle Park Lots

- Costs and Revenues related to the Downtown Mountain View Caltrain/JPB Station
- Costs and Revenues related to any private parking facility

Revenue and expenditure sources not included:

- Any one-time costs related to future capital expenditures not specifically outlined above (for example, there are known, upcoming costs related to installing induction lighting throughout the downtown that were not considered in this analysis. While this specific cost was known, future costs of this nature would be very difficult to project and are beyond the scope of this analysis.)
- Actual estimates of major future repair and capital replacement costs for PMAD facilities. These one-time future costs are not accounted for within the PMAD's operating budget. Based on discussions with City staff, a $40,000 annual contribution towards future maintenance needs was used to account for this expense. Conducting a detailed evaluation of future capital expenditures at parking facilities is a complex analysis that lies beyond the scope of this study.
- In-lieu fees paid by developers to satisfy portions of their parking requirements.
- Any financing costs related to the purchase of equipment (such as parking meters). This is a high level financial analysis of a hypothetical program and does not attempt to represent the specific mechanism the City might use to fund the capital component of project implementation costs. Program initiation costs are differentiated from ongoing program costs but all costs are recorded in the year that the expenditure is assumed to occur.

Existing Revenues and Expenditures

Parking in and around downtown Mountain View currently generates or captures revenue through a number of mechanisms. Similarly, the maintenance and administration of parking facilities in and around the downtown is a significant source of costs.

Parking Maintenance Assessment District Revenues and Expenditures

In Fiscal Year 2009-2010, the downtown Mountain View Parking Maintenance Assessment District received $430,800 in funding sources and revenues. The largest single source of revenues (as shown in table 3.2.1) was the $157,900 generated directly from the assessment of member district properties. An additional $272,900 in revenue was generated for the district from a variety of other sources including $146,200 from the sale of downtown employee parking permits, $41,600 in property taxes, $40,000 in rents and leases (deriving from the commercial space on the ground floor of the California Street parking structure currently occupied by CVS pharmacy), $41,900 in interest earnings, and $3,200 in Home Owner Property Tax Relief.

Table 3.2.1: Fiscal Year 2009-2010 Audited PMAD Revenues and Expenditures

Item	FY 2009-2010 Budgeted Amount
Revenues	
Assessment Revenues	$ 157,900
Other Revenues	
Property Taxes	$ 41,600
Licenses & Permits	$ 146,200
Interest Earnings	$ 41,900
Rents & Leases	$ 40,000
Other (HOPTR)	$ 3,200
Total PMAD Revenues	**$ 430,800**
Operational Costs	
Lots and structures O&M	$ 182,200
Utilities	$ 48,600
Supplies & Misc	$ 4,700
Administration Costs	$ 70,600
Total PMAD Operational Costs	$ 306,100
Non-Operational Costs	
Future Maintenance	$ 40,000
Total PMAD Non-Operational Costs	$ 40,000
Total PMAD Costs	**$ 346,100**
Net Revenue Sources Over (Under)	**$84,700**

Table 3.2.1 also shows that a total of $346,100 was expended towards parking maintenance assessment district costs for fiscal year 2009-2010. The majority of this amount, $182,200, was dedicated towards the operations and maintenance needs of the PMAD's 8 surface lots and two parking structures. Collectively this category includes most of the physical care and maintenance costs related the district's parking facilities. Costs captured in the $182,200 include such line items as elevator maintenance, steam cleaning and pressure washing, and expense transfers from the Parks, Streets, and Facilities department budgets for provided services. Utility costs for the PMAD were $48,600 and include all gas, electric, garbage, water, and telecom costs incurred by the district. Administration costs of $70,600 include both direct personnel costs as well as a cost transfer to the City's general fund to cover administrative expenses. All told, the PMAD had 2009-2010 audited operational expenses of $306,100.

Additionally, an estimated $40,000 in non-operational cost was set aside towards future maintenance not covered in the annual operating budget. This number was developed based on consultation with City Staff. At this time both of the City's parking garages are relatively new and may not have significant anticipated repairs or upcoming capital expenditures. While parking garages can have a useful life of 50 to 70 years, significant capital repairs will be required as these structures begin to age. Performing a structural inspection and assessment of future capital needs at the City's existing parking garages is its own undertaking and lies beyond the scope of this report. That said, the City should evaluate its future maintenance needs to ensure that the cost of future capital expenditures beyond regular repainting and minor pavement repairs are adequately covered as its facilities age.

"General" Downtown Parking Revenues and Expenditures

While the PMAD budget reflects much of the parking activity in the downtown, there are a variety of other costs and revenues related to downtown parking that are not part of the PMAD and accrue separately. These include existing enforcement and citation activities in the downtown as well as a

variety of maintenance programs focused on on-street parking and the public right of way. For the purposes of this analysis these have been titled as "general" downtown parking revenues and expenditures and are presented separately from costs associated with the PMAD and from future hypothetical parking programs.

Parking Enforcement and Citations:

Parking citations generate a significant amount of revenue for the City's general fund but also require the expenditure of City resources for enforcement, processing, and court fees. Developing a precise estimate of the hours and cost related to enforcement activities overall, and the downtown in particular, is difficult because parking enforcement in Mountain View is conducted on a citywide basis as a subset of more general police activity. Based on information provided by the Police Department, it was conservatively estimated that approximately twenty five hours a week (or five hours per weekday) of department staff time are dedicated to parking enforcement in the downtown including 4 daily hours of on-street patrols and 1 hour of in-office processing. These hours were assumed to include the participation of various different personnel title as show in table 3.2.2 below. Salary and benefits data from the City was used as shown in Table 3.2.2 below to calculate an average daily cost for parking enforcement activities in the downtown.

Table 3.2.2: Estimate of current downtown parking enforcement costs

Personnel Title	Calculated Hourly Cost*	Assumed Participation
Police Sgt	$ 93	5%
Police Officer	$80	15%
Police Assistant	$39	40%
Community Services Officer	$53	20%
Police Records Specialist	$52	20%
Daily Blended Personnel Costs		$266
Annual Blended Personnel Costs (249 enforcement days**)		$66,296
Estimated Annual Equipment and Supply Costs (@ 10% of labor)		$6,630
Estimated Total Downtown Enforcement Costs		**$72,926**

* Hourly employee costs are fully loaded and were provided by the City. **Assumes 260 weekdays- 11 holidays

As indicated in Table 3.2.2, 249 enforcement days were assumed per year to yield an estimated cost of $66,296 in labor. Equipment and supply costs equivalent to 10% of labor costs were assumed and added for a total estimated annual enforcement cost of $72,926. It is important to emphasize here that this annual cost reflects a fairly sparse level of parking enforcement. Police department staff estimated that only five to six personnel hours are spent per day on parking enforcement across the entire City and that perhaps 60% of this effort is focused on the downtown. The allotment above of five personnel hours per enforcement day to downtown parking is, again, a conservative estimate intended to ensure that the full costs of enforcement are adequately captured. While this analysis of current enforcement practices is presented to develop an estimate of baseline costs, analysis related to future parking management activities assumes a heavier level of enforcement using a more targeted approach to staffing model (police assistants as on-the-ground enforcement with supervision by a sergeant). These assumptions are described in detail later in this financial analysis.

Table 3.3.3 presents a citywide record of parking citations and revenues with a downtown area breakout. Citations are not tracked separately for the downtown and the breakout presented below is an estimate based on the assumption that 60% of citation activities occur within the defined downtown

study area. As the table indicates, approximately 3,500 parking citations are given out annually in the downtown, generating gross revenues of roughly $110,000-$120,000. Once 3rd party processing and court fees are deducted, the downtown generates just over $100,000 a year in income from parking citations. Currently, this income goes directly into the City's General Fund. Again, this reflects a very sparse level of parking enforcement. By comparison the City of Palo Alto has budgeted for parking citation revenues of $1.5 million dollars for fiscal year 2011 and the City of San Mateo has budgeted for just over $1 million.

Table 3.3.3: Parking Citations Citywide and Downtown

	FY 08	FY 09	FY 10	FY 11 (budgeted)
Citywide				
Total Citations*	6,011	5,716	5,969	NA
Revenue	$186,094	$188,849	$193,414	$214,450
3rd Party Processing	$14,616	$17,457	$17,849	$18,000
Court Fees	$475	$1,300	$1,275	$1,500
Net Revenue	**$171,003**	**$170,092**	**$174,290**	**$194,950**
Downtown (@ 60%)				
Estimated Citations	3,607	3,430	3,581	NA
Revenue	$111,656	$113,309	$116,048	$128,670
3rd Party Processing	$8,770	$10,474	$10,709	$10,800
Court Fees	$285	$780	$765	$900
Net Revenue	**$102,601**	**$102,055**	**$104,574**	**$116,970**

*Data on the total number of parking violations issued on a Citywide basis is published in the statistical section of the City's 2010 Comprehensive Annual Financial Report

Other "General" Maintenance Costs

Parking downtown, in both the core and periphery areas, involves a variety of additional operational costs. Estimates of these costs have been developed in conjunction with City staff and are described in table 3.2.4 on the following page.

Table 3.2.4: Other "General" Downtown Parking Expenditures

Service	Estimated FY 2011 Cost	Notes
Sweeping	$37,000	Applies to streets and is exclusive of sweeping costs related to downtown lots and parking structures (which are included in the PMAD's operational costs budget)
Street lighting	$55,000	Includes annual maintenance and repair of street lighting in the downtown
Signage Maintenance	$17,500	Includes annual maintenance and repair of on-street parking signage in the downtown (and is exclusive of signage maintenance at lots and structures captured in the PMAD budget)
Parks & Forestry Department Castro Street Maintenance Program	$244,400	Includes maintenance and servicing of streetscape and public areas along Castro Street in the commercial core of downtown and for the "Castro Street Color" decoration program. Excludes portion of Castro Street Maintenance Program already captured in the PMAD operational cost budget ($67,900). Also excludes estimated portion of program budget related to maintenance at and around Library and Civic Center ($130,950) since it was conceptually difficult to relate these costs to parking.
Total	**$353,900**	

The general parking expenditures presented in Table 3.2.4 above have all been tracked along with downtown parking enforcement costs and citation revenues as part of the "general" parking revenues and costs category.

Table 3.2.5, below presents an overall accounting of current parking revenues and expenditures in the downtown for fiscal year 2011.

Table 3.2.5: Fiscal Year 2011 Overall Downtown Parking Revenues and Expenditures

Item	FY2009-2010 Audited and/or FY 2011 Budgeted Amount
PMAD Revenues	
Assessment Revenues	$ 157,900
Other Revenues	$ 272,900
Total PMAD Revenues	**$ 430,800**
General Parking Revenues	
Citations	$ 128,670
Total General Revenues	**$ 128,670**
All Parking Revenues	**$ 559,470**
PMAD Parking Expenditures	
PMAD Operational Costs	$ 306,100
PMAD Non-Operational Costs	$ 40,000
Total PMAD Costs	**$ 346,100**
General Parking Expenditures	
Citation Processing Fees	$ 11,700
Enforcement Costs	$ 72,926
Other Maintenance Costs	$ 353,900
Total General Expenditures	**$ 438,526**
All Parking Expenditures	**$ 784,626**
PMAD Net Revenue Sources Over (Under)	**$ 84,700**
General Net Revenue Sources Over (Under)	**$ (309,856)**
All Downtown Parking Net Revenue Sources Over (Under)	**$ (225,156)**

As the table indicates, the PMAD currently has a net revenue balance of $84,700. General downtown parking activities, alternately, are estimated to cost the City nearly $310,000 over the amount of revenue generated by citations. This means that overall, the City is spending over $225,000 on parking related activities above their dedicated revenue and funding sources for fiscal year 2009-10.

Projecting Future Parking Costs and Revenues

Base Case Scenario

The next step in this financial analysis involves projecting existing parking revenues and expenditures over a 30 year period. This "Base Case" scenario assumes that no major changes are made in how parking is managed and paid for in downtown Mountain View and only analyzes how current revenue and cost trends are likely to change over time. Once the base case scenario has been developed, two alternative financial scenarios are also presented.

Projecting the financial implications of parking in the downtown over the next 30 years involves making a variety of assumptions about how the revenue sources and expenditures shown above will change over time. In most cases, it is assumed that costs will simply inflate at an annual percentage rate. Unless otherwise noted, a standard rate of 2% has been used to inflate all personnel and capital costs. Revenues derived from sources where the City has the ability to exercise control over a fee schedule (permit sales, rents, and citations) are assumed to escalate at the same average 2% inflator rate applied to City costs. This reflects a base-case assumption that the number of citations given and permits sold in the downtown will not change but that the City will periodically review and adjust its fee schedule to track increases in cost (as new parking management programs are analyzed later in this section, these base case assumptions are modified). The actual PMAD assessment is not assumed to change in the future and is held constant at the fiscal year 2009-2010 rate of $157,900 for all future years. Other PMAD revenues are tied to property taxes and are assumed to inflate at the rate of 2% per year. Tables 3.2.6 and 3.2.7 below outline the basic assumptions used to project existing revenues and expenditures forward.

Table 3.2.6: Assumptions Used to Project Existing Revenue Sources

Revenue Source	Assumptions related to Future Growth
PMAD Revenues	
Assessment Revenues	No change in the PMAD is assumed for future years and the assessment is held constant at the fiscal year 2009-2010 level of $157,900 for all future years.
Property Taxes	It is assumed that property tax revenues will increase at a rate of 2% per year
Licenses & Permits	In this base case analysis it is assumed that revenue generated from the sale of downtown parking permits will increase at 2% per year based on the periodic adjustment of the fee schedule. In the base case scenario, the number of permits sold is assumed to remain relatively constant.
Interest Earnings	It is assumed that interest earnings will increase at 2% per year. Predicting the future balance of funds available in the maintenance assessment district's account is difficult and will depend on capital expenditures and the rate at which replacement reserve funds are set aside. In the base-case scenario it is assumed to remain relatively constant with interest earnings accruing at a standard rate.
Rents & Leases	Includes the lease on the city-owned retail space currently occupied by CVS pharmacy. It is assumed that rental income will be held constant
Other (HOPTR)	Homeowner's Property Tax Relief funds are assumed to increase at 2% per year.
Other Revenues	
Citations	An averaged 2% increase per year is assumed based on periodic adjustment of fee schedule. For the base case scenario no change in enforcement level is assumed and the number of tickets given out in the downtown is assumed to remain roughly constant based on number of personnel hours dedicated to enforcement.

Table 3.2.7: Assumptions Used to Project Existing Expenditures

Revenue Source	Assumptions related to Future Growth
PMAD Operational Costs	
Lots and structures O&M	It is assumed that annual maintenance costs for lots and structures will increase at 2% a year
Utilities	It is assumed that annual utility costs will increase at 2% a year
Supplies & Misc	It is assumed that annual supply costs will increase at 2% a year
Administration Costs	It is assumed that annual PMAD administration costs will increase at 1% a year
PMAD Non-Operational Costs	
Future Maintenance	It is assumed that the annual contribution to future maintenance will remain fixed at $40,000 per year
General Costs	
Citation Processing Fees	Citation processing fees are assumed to increase at 2% a year
Enforcement Costs	Enforcement costs are assumed to increase at 2% a year
General Maintenance Costs	An annual 2% increase in all general maintenance costs is assumed

Base Case Results

Table 3.2.8 (presented on the following two pages) provides a summary of the base case projections of current revenues and expenditures over the next 30 years. The first part of the table shows expenditures as projected for the next five years (fiscal year 2012 through 2016) while the second part shows the longer range projections of fiscal years 2021 through 2041 at five year intervals. It is important to emphasize that while these projections are based on sound data and assumptions, they are only projections and involve a substantial degree of uncertainty, particularly in more distant future years.

There are several important conclusions revealed by the base case analysis. As previously noted, the PMAD currently generates a net surplus of revenue. This surplus is projected to continue through 2041 with a slight decrease over time as the PMAD's rate of expenditure increases faster than the increases assumed for its revenue sources. As indicated in section 3.1 of this report, actual PMAD assessments are assumed to be held constant in future years and will constitute an increasingly small contribution to the PMAD as costs and other revenues escalate.

Non-PMAD parking activities currently run a deficit of over $309,000. This deficit is primarily driven by downtown maintenance costs that cost over $350,000 a year and have no revenue offset. Parking citations given in and around the downtown are estimated to generate some $44,044 in net revenue to the City above the costs of enforcement and citation processing. Within the base case scenario elaborated here, parking citations will continue to generate a substantial amount of net revenue in future years, but will never be sufficient to offset the costs of street and signage maintenance in and around the downtown.

Table 3.2.8: Base Case Scenario Financial Outcomes

		Base Year Estimate					
		FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Revenues							
PMAD Revenues							
Assessments	$	157,900	157,900	157,900	157,900	157,900	157,900
Other Revenue Sources							
Property Taxes		41,600	42,432	43,281	44,146	45,029	45,930
Licenses & Permits		146,200	149,124	152,106	155,149	158,252	161,417
Interest Earnings		41,900	42,738	43,593	44,465	45,354	46,261
Rents & Leases		40,000	40,000	40,000	40,000	40,000	40,000
Other (HOPTR)		3,200	3,264	3,329	3,396	3,464	3,533
Total PMAD Revenues		430,800	435,458	440,209	445,055	449,998	455,040
General Downtown Parking Revenues							
Baseline Citations (commerical downtown)		128,670	131,243	133,868	136,546	139,277	142,062
Total General Revenues		128,670	131,243	133,868	136,546	139,277	142,062
Total Parking Revenues	**$**	**559,470**	**566,701**	**574,077**	**581,601**	**589,275**	**597,102**
Expenditures							
PMAD Expenditures- Operational							
Lots and structures O&M		182,200	185,844	189,561	193,352	197,219	201,164
Utilities		48,600	49,572	50,563	51,575	52,606	53,658
Supplies & Misc		4,700	4,794	4,890	4,988	5,087	5,189
Administration Costs		70,600	71,306	72,019	72,739	73,467	74,201
Total Operational PMAD Expenditures		306,100	311,516	317,033	322,654	328,379	334,212
PMAD Expenditures- Non-Operational							
Ongoing Future Maintenance		40,000	40,000	40,000	40,000	40,000	40,000
Total Non-Operational PMAD Expenditures		40,000	40,000	40,000	40,000	40,000	40,000
Total PMAD Expenditures		346,100	351,516	357,033	362,654	368,379	374,212
General Downtown Parking Expenditures							
Enforcement		72,926	74,384	75,872	77,390	78,937	80,516
Citation Processing		11,700	11,934	12,173	12,416	12,664	12,918
Other Maintenance		353,900	360,978	368,198	375,562	383,073	390,734
Total General Expenditures		438,526	447,296	456,242	465,367	474,675	484,168
Total Parking Expenditures	**$**	**784,626**	**798,812**	**813,276**	**828,021**	**843,054**	**858,380**
Net Revenues & Sources Over (Under)							
PMAD		84,700	83,942	83,176	82,402	81,619	80,828
General		(309,856)	(316,053)	(322,374)	(328,822)	(335,398)	(342,106)
All Downtown Area Parking	**$**	**(225,156)**	**(232,111)**	**(239,198)**	**(246,420)**	**(253,779)**	**(261,278)**

Table 3.2.8: Base Case Scenario Financial Outcomes (continued)

		Base Year Estimate					
		FY 2011	FY 2021	FY2026	FY2031	FY2036	FY2041
Revenues							
PMAD Revenues							
Assessments	$	157,900	157,900	157,900	157,900	157,900	157,900
Other Revenue Sources							
Property Taxes		41,600	50,710	55,988	61,815	68,249	75,353
Licenses & Permits		146,200	178,217	196,766	217,246	239,857	264,821
Interest Earnings		41,900	51,076	56,392	62,261	68,741	75,896
Rents & Leases		40,000	40,000	40,000	40,000	40,000	40,000
Other (HOPTR)		3,200	3,901	4,307	4,755	5,250	5,796
Total PMAD Revenues		430,800	481,804	511,353	543,977	579,997	619,766
General Downtown Parking Revenues							
Baseline Citations (commerical downtown)		128,670	156,848	173,173	191,197	211,097	233,068
Total General Revenues		128,670	156,848	173,173	191,197	211,097	233,068
Total Parking Revenues	**$**	**559,470**	**638,652**	**684,526**	**735,174**	**791,094**	**852,834**
Expenditures							
PMAD Expenditures- Operational							
Lots and structures O&M		182,200	222,101	245,217	270,740	298,918	330,030
Utilities		48,600	59,243	65,409	72,217	79,733	88,032
Supplies & Misc		4,700	5,729	6,326	6,984	7,711	8,513
Administration Costs		70,600	77,986	81,964	86,145	90,540	95,158
Total Operational PMAD Expenditures		306,100	365,060	398,916	436,086	476,902	521,734
PMAD Expenditures- Non-Operational							
Ongoing Future Maintenance		40,000	40,000	40,000	40,000	40,000	40,000
Total Non-Operational PMAD Expenditures		40,000	40,000	40,000	40,000	40,000	40,000
Total PMAD Expenditures		346,100	405,060	438,916	476,086	516,902	561,734
General Downtown Parking Expenditures							
Enforcement		72,926	88,896	98,149	108,364	119,643	132,095
Citation Processing		11,700	14,262	15,747	17,386	19,195	21,193
Other Maintenance		353,900	431,402	476,303	525,877	580,610	641,041
Total General Expenditures		438,526	534,561	590,198	651,626	719,448	794,329
Total Parking Expenditures	**$**	**784,626**	**939,620**	**1,029,114**	**1,127,712**	**1,236,351**	**1,356,063**
Net Revenues & Sources Over (Under)							
PMAD		84,700	76,744	72,436	67,891	63,095	58,032
General		(309,856)	(377,713)	(417,025)	(460,430)	(508,351)	(561,261)
All Downtown Area Parking	**$**	**(225,156)**	**(300,968)**	**(344,589)**	**(392,538)**	**(445,257)**	**(503,229)**

Alternative Financial Scenarios:

How the City of Mountain View chooses to manage parking in the downtown will have a substantial impact on the financial picture presented in Table 3.2.8. The following analysis presents two alternative financial scenarios for parking in and around the downtown based on the implementation of hypothetical residential permit programs and parking pricing in the downtown. It is crucial to note that these estimates have been developed only for the purposes of providing a financial comparison. The hypothetical programs have been designed in a manner that is realistic and reasonable so as to appropriately capture the likely revenues and costs associated with each one. They have not, however, undergone the kind of staff and public scrutiny that would be appropriate for a major parking management program actually slated for implementation.

Adoption and implementation of any parking management program should be based on the consideration of a wide range of policy issues in addition to financial outcomes. The discussion of hypothetical programs delineated in the financial scenarios below should not be viewed in any way as recommendations or endorsements. Similarly, if the City were to move ahead with the implementation of such programs their details and timing would almost certainly vary to some degree from the assumptions presented here with resultant financial implications. Wilbur Smith Associates does believe, however, that these high level financial projections are appropriate for establishing the order of magnitude financial outcomes that could result from different parking management programs in the downtown and are thus a useful tool for considering future parking policy options.

Alternative Financial Scenario 1: Limited Residential Permit Parking

Input from City staff and downtown area residents has indicated that residential permit parking is a potential parking management strategy of interest in the residential neighborhoods surrounding the downtown. Many of the program and policy details of residential permit programs are discussed at length in section 3.3 of this report. The first alternative financial scenario presented in this analysis examines the cost of instituting a relatively small scale residential permit program in the residential neighborhood surrounding the Caltrain/JPB station. Data gathered in Task 1 and input received from area residents have indicated that downtown and commuter spillover parking are a significant issue in this neighborhood and a residential permit program is one potential mechanism to address these concerns.

The following analysis assumes the implementation of a residential permit parking program in the residential neighborhood roughly bounded by West Evelyn Avenue, View Street, Mercy Street, and Calderon Avenue. A graphic representation of the program is depicted in figure 3.2.1. For the purposes of this analysis, it is assumed that the residential permit program would begin in fiscal year 2012 and would be enforced Monday through Friday from 8:00am to 5:00pm. Signs posted on streets would indicate a 2-hour time limit during these hours with an exception for vehicles displaying a permit sticker.

Legend

Hypothetical Residential Permit Parking Program (2012)

≈# Households
452

Parking district boundary
Caltrain station
VTA station

NORTH

500 1000 FEET

The area covered by the modeled RPP program includes 50 blockfaces and 735 on-street spaces. City staff estimates that in 2009 there were 401 residential households residing in the area and that by the year 2030, this number will to increase to 742. For modeling purposes, growth in households was assumed to occur at an even annual rate (in reality, growth will likely occur unevenly in relation to individual new residential developments). This assumed rate of growth results in an anticipated 452 households in 2012.

Review of the surveys returned by residents in the area reveals that each household owns an average of just under 2 vehicles and that an average of 30% of these vehicles are currently typically on the street. On the one hand, pricing on-street residential parking might encourage some residents to park in their garages and driveways rather than on-street, thereby lowering the rate of on-street parking. On the other hand, residents who do not always park on-street may still want to ensure that they have the option of doing so and may thus choose to purchase a permit. Given these countervailing tendencies it was assumed that the proportion of residents parking on-street (or at least purchasing a permit that would allow them to do so) would remain relatively constant with the implementation of a permit program. This equates to 30% participation rate among the estimated total of all vehicles in the neighborhood. A base permit price was set at $50 per year with an assumed increase of $10 every five years. This price tends toward the higher end of rates charged by neighboring cities but is broadly comparable to permit prices seen around the Bay Area. It was assumed that 1-day temporary guest permits would be also be sold to permit holders at a cost equivalent to 1/50th of the annual permit price. The model further assumes that 12 guest permits are sold for every annual permit. Finally, it was assumed that as the price of the permit increased, some residents would stop parking their cars on the streets. The price-elasticity of residential permit parking was set at 10%, meaning that there would be a 10% decrease in demand for permits for every 100% increase in permit price. Table 3.2.9, below, summarizes these assumptions:

Table 3.2.9: Hypothetical Permit Program Demand Assumptions

Assumption	Estimate Used
Program start initiation year	2012
Estimated households in permit area in initiation year	452
Total estimated vehicles owned	904
Estimated number currently parked on street	271
Estimated base demand for annual permits	271
Estimated base annual demand for temporary guest permits	3252
Base permit price assumed	$50
5-year price increment increase	$10
Base 1-day guest permit price	$1
Reduction in permit demand for every 100% increase in price	10%

A residential permit program will also likely result in increased revenue from parking citations. It is important to note, again, that Mountain View's current system of parking enforcement is fairly light for a large downtown. Similarly, a wide mix of police personnel are currently involved in parking enforcement activities. While this enforcement configuration has been assumed to continue for the "base case" scenario, it is also assumed that any new parking management programs would be fully and regularly enforced using a more traditional enforcement scheme (a staff of police assistants with a supervising police sergeant). Similarly, it is assumed that the number of citations given out as part of future enforcement activities will be a direct function of the number of on-the-street enforcement hours. Using the data previously presented on parking citations, it is estimated that in 2010 (the most recent year for which comprehensive statistics are available) the City of Mountain View issued 3,581 parking violations in the downtown and ultimately received $116,048 in resulting revenue. This rate of

ticketing assumes an enforcement program where 5 hours of police staff time were dedicated on a daily basis to parking enforcement downtown and 4 of these hours were assumed to be active, "on-the-street" enforcement hours. Assuming 249 enforcement days per year this results in an estimated 3.6 parking violations per active enforcement hour and an estimated $32.4 (in 2010 dollars) in revenue for every citation issued (once the variety of violations and unpaid or contested citations have been averaged out).

This rate of citation issuance per enforcement hour and rate of revenue return per citation (escalated to the appropriate year) has been used as the basis for calculating the likely impact in parking citations that any new parking management program, including the hypothetical RPP program described above, would have. This rate is based on enforcement in the commercial areas of downtown, however, and in residential areas with a lower density of parking it is assumed that the rate of citation issuance will be somewhat lower. For the purpose of calculating the citation impacts of new RPP zones, a lower rate of 1.2 citations per hour (1/3 of the commercial downtown rate) has been used. The modeled RPP zone assumes an enforcement scheme with 4 active staff hours per enforcement day (additional supervisory time is also assumed but does not impact the calculated rate of citation issuance). Assuming the same 249 enforcement days per year, an estimated 1195 new parking citations will result. 3rd party processing and court fees were collectively assumed to be equivalent to 10% of citation revenues. Table 3.2.10 summarizes assumptions made regarding enforcement and citations.

Table 3.2.10: Hypothetical Permit Program Citation and Enforcement Assumptions

Assumption	Estimate Used
Police Sgt hours per enforcement day	1
Police Assistant hours per enforcement day	4
Records Specialist hours per enforcement day	0.25
Enforcement days per year	249
Enforcement Equipment and Supplies	Equivalent to 10% of annual personnel costs
Citations issued per Police Assistant Hour (residential area)	1.2
Average revenue per citation (2010 dollars)	$32.4
Citations issued annually	1195
Processing and Court fees	Equivalent to 10% of annual citation revenue

While new citations, selling residential and guest permits will generate revenue, implementing a permit parking system will also involve substantial costs to the City in both ongoing and program initiation costs.

City staff estimated that the administrative staff time involved in setting up a residential area would equate to approximately 50 hours of labor (primarily public works staff time) per three block area or a cost of nearly $4,000 in 2011 dollars based on current personnel costs. Based on this analysis, developing the proposed RPP district would require approximately 200 hours of staff time. Additionally, it is estimated that training time by the police department equivalent to some 80 hours would be required for program implementation. New supplies including the procurement and installation of signs (estimated at $500 per sign including installation in 2011 dollars) and the purchase of a parking enforcement vehicle (estimated at $28,000 in 2011 dollars) are also assumed. Table 3.3.11 summarizes program initiation assumptions

Table 3.2.11: Hypothetical Permit Program Initiation Requirements

Assumption	Estimate Used
Administrative time (primarily public works staff)	200 hours
Enforcement Personnel Training (Police Assistant with some participation by Police Sgt)	80 hours
Signs (including installation)	125
Enforcement Vehicle	1 vehicle

Table 3.2.12 summarizes assumptions related to the ongoing operation and administration of the program. These requirements include administration (program review, permit sales, and financial record keeping), the direct enforcement costs described earlier, citation processing costs, the physical supply of permits and guest permits, and a reserve for signage replacement.

Table 3.2.12: Hypothetical Permit Program Ongoing Requirements

Assumption	Estimate Used
Administration	26 hours per month (primarily a clerk overseeing records and permit sales, but also includes program review and oversight by Public Works)
Direct Enforcement Costs	Includes 5.25 hours of enforcement and supervision staff time per enforcement day along with an allocation for equipment
Citation Processing	3rd party processing and court fees estimated at 10% of citation revenues
Permits and supplies	Materials costs for permit stickers and guest permits
Signage replacement fund	Reserve for signage replacement assuming a 10 year useful life

Table 3.2.13 (presented on the following two pages) provides a summary of the "Alternative Financial Scenario 1" projections of all current parking revenues and expenditures over the next 30 years. The table includes the financial analysis of the hypothetical RPP programs financial performance (based on all of the above assumptions) and shows how it integrates with the larger set of downtown parking finances. The first part of the table shows expenditures as projected for the next five years (fiscal year 2012 through 2016) while the second part shows the longer range projections of fiscal years 2021 through 2041 at five year intervals. It is important to emphasize that while these projections are based on sound data and assumptions, they are only projections and involve a substantial degree of uncertainty, particularly in more distant future years.

Table 3.2.13: Alternative Financial Scenario 1 Outcomes

		Base Year Estimate					
		FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Revenues							
PMAD Revenues							
Assessments	$	157,900	157,900	157,900	157,900	157,900	157,900
Other Revenue Sources		272,900	277,558	282,309	287,155	292,098	297,140
Total PMAD Revenues		430,800	435,458	440,209	445,055	449,998	455,040
General Downtown Parking Revenues							
Baseline Citations (commercial downtown)		128,670	131,243	133,868	136,546	139,277	142,062
Total General Revenues		128,670	131,243	133,868	136,546	139,277	142,062
RPP Program Revenues							
Annual Permit Sales		-	13,560	14,070	14,580	15,090	18,116
Guest Permit Sales		-	3,254	3,377	3,499	3,622	4,348
RPP-related Parking Citations		-	40,293	41,099	41,921	42,759	43,614
Total RPP Revenues		-	57,107	58,545	60,000	61,471	66,079
Total Parking Revenues	**$**	**559,470**	**623,809**	**632,623**	**641,601**	**650,746**	**663,181**
Expenditures							
PMAD Expenditures							
Total Operational PMAD Expenditures		346,100	351,516	357,033	362,654	368,379	374,212
Total Non-Operational PMAD Expenditures		40,000	40,000	40,000	40,000	40,000	40,000
Total PMAD Expenditures		346,100	351,516	357,033	362,654	368,379	374,212
General Downtown Parking Expenditures							
Enforcement & Citation Processing		84,626	86,318	88,045	89,806	91,602	93,434
Other Maintenance		353,900	360,978	368,198	375,562	383,073	390,734
Total General Expenditures		438,526	447,296	456,242	465,367	474,675	484,168
RPP Operating Costs							
Administration		-	14,021	14,302	14,588	14,879	15,177
Supplies		-	3,596	3,668	3,741	3,816	3,893
Enforcement and Citation Processing		-	70,572	71,983	73,423	74,892	76,389
Signage & Equipment Maintenance		-	12,087	12,329	12,575	12,827	13,083
Total RPP Operating Costs		-	100,276	102,282	104,327	106,414	108,542
RPP Program Initiation Costs							
Administration		-	15,565	-	-	-	-
Enforcement Staff Training		-	5,386	-	-	-	-
Signage & Equipment		-	92,310	-	-	-	-
Total Program Initiation Costs		-	113,261	-	-	-	-
Total Parking Expenditures	**$**	**784,626**	**1,012,349**	**915,557**	**932,348**	**949,468**	**966,923**
Net Revenues & Sources Over (Under)							
PMAD		84,700	83,942	83,176	82,402	81,619	80,828
General		(309,856)	(316,053)	(322,374)	(328,822)	(335,398)	(342,106)
RPP Program		-	(156,430)	(43,736)	(44,328)	(44,943)	(42,464)
All Downtown Area Parking	**$**	**(225,156)**	**(388,541)**	**(282,935)**	**(290,748)**	**(298,722)**	**(303,742)**

Table 3.2.13: Alternative Financial Scenario 1 Outcomes (Cont)

		Base Year Estimate					
		FY 2011	FY 2021	FY2026	FY2031	FY2036	FY2041
Revenues							
PMAD Revenues							
Assessments	$	157,900	157,900	157,900	157,900	157,900	157,900
Other Revenue Sources		272,900	323,904	353,453	386,077	422,097	461,866
Total PMAD Revenues		430,800	481,804	511,353	543,977	579,997	619,766
General Downtown Parking Revenues							
Baseline Citations (commercial downtown)		128,670	156,848	173,173	191,197	211,097	233,068
Total General Revenues		128,670	156,848	173,173	191,197	211,097	233,068
RPP Program Revenues							
Annual Permit Sales		-	23,905	30,389	37,363	45,835	55,666
Guest Permit Sales		-	5,737	7,293	8,967	11,000	13,360
RPP-related Parking Citations		-	48,154	53,165	58,699	64,808	71,554
Total RPP Revenues		-	77,795	90,848	105,029	121,644	140,580
Total Parking Revenues	**$**	**559,470**	**716,447**	**775,373**	**840,203**	**912,738**	**993,414**
Expenditures							
PMAD Expenditures							
Total Operational PMAD Expenditures		346,100	405,060	438,916	476,086	516,902	561,734
Total Non-Operational PMAD Expenditures		40,000	40,000	40,000	40,000	40,000	40,000
Total PMAD Expenditures		346,100	405,060	438,916	476,086	516,902	561,734
General Downtown Parking Expenditures							
Enforcement & Citation Processing		84,626	103,158	113,895	125,750	138,838	153,288
Other Maintenance		353,900	431,402	476,303	525,877	580,610	641,041
Total General Expenditures		438,526	534,561	590,198	651,626	719,448	794,329
RPP Operating Costs							
Administration		-	16,757	18,501	20,426	22,552	24,899
Supplies		-	4,298	4,745	5,239	5,784	6,386
Enforcement and Citation Processing		-	84,340	93,118	102,810	113,511	125,325
Signage & Equipment Maintenance		-	14,445	15,949	17,608	19,441	21,465
Total RPP Operating Costs		-	119,840	132,312	146,084	161,288	178,075
RPP Program Initiation Costs							
Administration		-	-	-	-	-	-
Enforcement Staff Training		-	-	-	-	-	-
Signage & Equipment		-	-	-	-	-	-
Total Program Initiation Costs		-	-	-	-	-	-
Total Parking Expenditures	**$**	**784,626**	**1,059,460**	**1,161,427**	**1,273,796**	**1,397,639**	**1,534,138**
Net Revenues & Sources Over (Under)							
PMAD		84,700	76,744	72,436	67,891	63,095	58,032
General		(309,856)	(377,713)	(417,025)	(460,430)	(508,351)	(561,261)
RPP Program		-	(42,044)	(41,465)	(41,055)	(39,644)	(37,495)
All Downtown Area Parking	**$**	**(225,156)**	**(343,012)**	**(386,054)**	**(433,593)**	**(484,901)**	**(540,724)**

The summary of revenues and expenditures presented in Table 3.2.13 paints the same financial picture as that shown earlier in Table 3.2.8 with respect to the PMAD and general downtown parking activities.

Model results also indicate that the RPP program will not be revenue neutral and would require a subsidy of roughly $40,000 per year based on the initial modeled permit price of $50 per year. In 2012, the RPP is projected to generate $57,100 in revenue, with the balance of this derived from increased parking citations. Program costs for the same year, however, are estimated at $100,276 (not including estimated program initiation costs of over $113,000).

The subsidy required for the RPP is actually estimated to decline over time, however, as permit prices increase (at a rate of $10 every 5 years) and demand in the RPP neighborhood grows (the general plan projects significant growth in residential units in the area designated for an RPP). At an initial annual permit price of $50, however, the program will still not be revenue neutral within the 30 year model horizon. In order for the RPP program described in Scenario 1 to be revenue neutral in its first year of operation (not including initiation costs), a base annual permit price of nearly $170 dollars would be required. This finding is in line with the experiences of other Bay Area cities with respect to permit pricing.

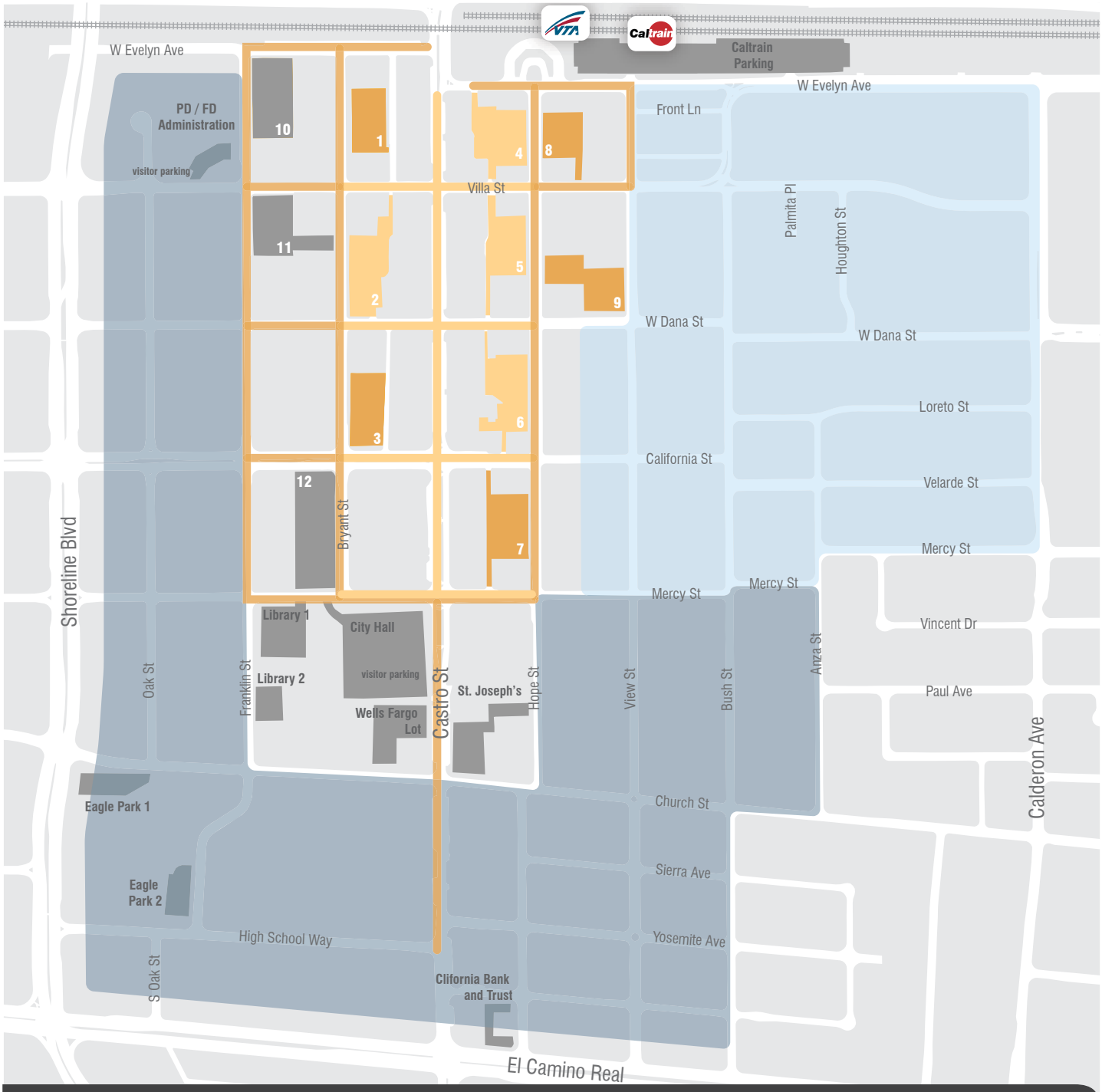
Alternative Financial Scenario 2: Metered Parking in the Commercial Core with a Surrounding Residential Permit Program

The second alternative financial scenario is a more involved parking management approach that includes both a residential permit parking program and a pricing (metering) program at public facilities in the commercial core of the downtown. The areas covered in this hypothetical program are shown in figure 3.2.2 (the few blockfaces near the center of the downtown that are not shown as being priced or RPP restricted are assumed to remain as time limited parking. Similarly, temporary lots 10, 11, and 12 are not assumed to be priced and would remain as time restricted only until the time of their development).

Given the large scale of this undertaking, it is assumed that both the RPP and pricing programs would be implemented in two phases. This has the benefit of spreading program initiation costs over a longer time frame and of allowing customers, businesses, and residents, more time to adapt to the new parking system. For modeling purposes it is assumed that the Phase 1 RPP (which is identical to the RPP program modeled in Scenario 1) would begin in fiscal year 2012 and the Phase 1 pricing program would begin in fiscal year 2013. The Phase 2 RPP program would begin in fiscal year 2015 and the Phase 2 pricing program would begin in fiscal year 2016.

RPP Programs

The phase 1 RPP program is identical to the program described in Alternative Scenario 1 above and includes all the same underlying assumptions regarding program administration, revenues, and costs. The Phase 2 RPP represents a significant expansion of the RPP zone in anticipation of widespread pricing



Legend

Hypothetical Residential Permit Parking Program

(2012)
Phase 1 — ≈# Households: 452

(2015)
Phase 2: 988

Hypothetical Pricing Program

(2013)
Phase 1 — # Spaces
Off-Street: 364
On-Street: 218

(2016)
Phase 2
Off-Street: 433
On-Street: 382

Parking district boundary
Caltrain station
VTA station

NORTH
500 1000 FEET

Figure 3.2.2 Financial Analysis Scenario 2

throughout the downtown. The underlying assumptions used to model the program are largely similar to those used for the phase 1 RPP program and are presented below for comparisons. The few areas where assumptions differed significantly are noted. Table 3.2.14 compares demand assumptions for the two phases of the program. Note that in all cases the revenues and expenditures associated with Phase 2 are presented as a marginal addition to ongoing Phase 1 revenues and costs.

Table 3.2.14: Permit Program Demand Assumptions, Phase 1 and 2

Assumption	Phase 1 Estimate	Phase 2 Estimate
Program start initiation year	2012	2015
Estimated households in permit area in initiation year	452	988
Total estimated vehicles owned	904	1976
Estimated number currently parked on street	271	593
Estimated base demand for annual permits	271	593
Estimated base annual demand for temporary guest permits	3252	7114
Base permit price assumed	$50	$50
Citywide 5-year price increment increase	$10 (first increases in 2016)	$10 (first increases in 2016)
Base 1-day guest permit price	$1	$1
Reduction in permit demand for every 100% increase in price	10%	10%

Similarly, Table 3.2.15 presents enforcement and citation assumptions for both phases of the hypothetical permit program.

Table 3.2.15: Permit Program Citation and Enforcement Assumptions, Phase 1 and 2

Assumption	Phase 1 Estimate	Phase 2 Estimate
Police Sgt hours per enforcement day	1	2
Police Assistant hours per enforcement day	4	7
Records Specialist hours per enforcement day	0.25	0.5
Enforcement days per year	249	249
Enforcement Equipment and Supplies	Equivalent to 10% of annual personnel costs	Equivalent to 10% of annual personnel costs
Citations issued per Police Assistant Hour (residential area)	1.3	1.3
Average revenue per citation (2010 dollars)	$32.4	$32.4
Citations issued annually	1195	2092
Processing and Court fees	Equivalent to 10% of annual citation revenue	Equivalent to 10% of annual citation revenue

Table 3.2.16 presents updated assumptions related to Phase 1 and Phase 2 initiation requirements. Note that the estimate for enforcement training is lower for Phase 2 since it is assumed that RPP enforcement procedures will already have been developed by the police department during the Phase 1 implementation.

Table 3.2.16: Permit Program Initiation Requirements, Phase 1 and 2

Assumption	Phase 1 Estimate	Phase 2 Estimate
Administrative time (primarily public works staff)	200 hours	433 hours
Enforcement Personnel Training (Police Assistant with some participation by Police Sgt)	80 hours	40 hours
Signs (including installation)	125	225
Enforcement Vehicle	1 vehicle	2 vehicles

Finally, Table 3.2.17 summarizes assumptions related to the ongoing operation and administration of both phases of the hypothetical RPP program.

Table 3.2.17: Permit Program Ongoing Requirements, Phase 1 and 2

Assumption	Phase 1 Estimate	Phase 2 Estimate
Administration	26 hours per month (primarily a clerk overseeing records and permit sales, but also includes program review and oversight by Public Works)	50 hours per month, same staff mix assumed.
Direct Enforcement Costs	Includes 5.25 hours of enforcement and supervision staff time per enforcement day along with an allocation for equipment	Includes 9.5 hours of enforcement and supervision staff time per enforcement day along with an allocation for equipment
Citation Processing	3rd party processing and court fees estimated at 10% of citation revenues	3rd party processing and court fees estimated at 10% of citation revenues
Permits and supplies	Materials costs for permit stickers and guest permits. Lump sum estimate.	Materials costs for permit stickers and guest permits. Lump sum estimate.
Signage replacement fund	Reserve for signage replacement assuming a 10 year useful life	Reserve for signage replacement assuming a 10 year useful life

Pricing Program

The hypothetical pricing program modeled here assumes the installation of on-street meters in the commercial areas of downtown (as shown in Figure 3.3.2) and on all permanent parking district lots and structures. Blockfaces and lots chosen for the initial phase one implementation were observed to have especially high peak hour occupancies during the lunch hour. For financial modeling purposes, it is assumed that pricing is in effect from 8:00am to 5:00pm Monday through Friday. Again, it is critical to note that these assumptions are not intended to be recommendations about whether or how parking pricing should be implemented. The hypothetical program discussed below is intended to represent a realistic and reasonable, "middle of the road" pricing approach for the purposes of establishing order of magnitude financial outcomes.

Parking Demand and Pricing

The revenues derived from parking pricing are highly dependent on the demand for parking in the priced areas. In this case, the baseline parking demand projections developed in Task 2 of this project were used as parking demand inputs. Peak hour demand estimates for the areas where pricing is modeled were adjusted to 9-hour weekday averages (8:00am to 5:00pm) using utilization data collected in Task 1.

The hypothetical pricing program assumes a tiered pricing system where Phase 1 on-street spaces are priced the highest since they offer immediate access to most businesses and are highly desirable spaces for short term customers (the initiation price modeled was $1.00 per hour). Phase 1 off-street spaces are priced at a level that is slightly lower rate ($0.75 per hour in the initiation year). When Phase 2 spaces are priced in fiscal year 2016, it is assumed that these spaces will be priced at an even lower rate since they are further away from the commercial center. Prices are initially set at $0.50 for Phase 2 on-street spaces and only $0.25 for Phase 2 off-street spaces. A price increase of $0.25-$0.50 was assumed every five years for all spaces with the relative price differences between all spaces maintained.

Table 3.2.18: Pricing Program Demand Assumptions

Assumption	Phase 1 Estimate	Phase 2 Estimate
Program Initiation Year	2013	2016
Parking Spaces included	215 on-street spaces, 365 off-street spaces	375 on-street spaces, 933 off-street spaces
Average hourly parking demand immediately prior to initiation (weekdays 8:00am-5:00pm)	130 on-street, 224 off-street	229 on-street, 407 off-street
On-Street price per hour in initiation year	$1.00 per hour on-street, $0.75 off-street	$0.50 on-street, $0.25 off-street
Initial % diversion of demand at start of pricing	30% of demand assumed to relocate to cheaper / free parking or defer trip	30% of demand assumed to relocate to cheaper / free parking or defer trip 30%
Average hourly parking demand immediately after initiation (weekdays 8:00am-5:00pm)	94 on-street, 171 off-street	160 on-street,303 off-street
Destination of diverted drivers	75% of diverted on-street drivers assumed to relocate to free or cheaper area within downtown. 50% of off-street drivers assumed to relocate to free or cheaper location	25% of diverted on-street drivers are assumed to relocate to a cheaper area in the downtown. Any diverted off-street drivers are assumed to relocate outside of the downtown or defer their trips.
Price increase schedule	$0.25 to $0.50 increases every 5 years	$0.25 to $0.50 increases every 5 years
Subsequent reduction in parking demand for every 100% increase in price	10% reduction in parking demand assumed for every 100% increase in price	10% reduction in parking demand assumed for every 100% increase in price

Drivers can be fairly sensitive to the introduction or increase of parking pricing and the financial model attempts to capture this affect by modeling an initial reduction in parking demand when pricing is introduced and subsequent reductions whenever the price of parking increases. Task 3.3 in this report presents a more nuanced and in depth analysis of driver's reaction to parking pricing. For modeling purposes, however, an initial straight reduction of 30% is applied to parking demand in all areas when pricing is implemented. 30% is a substantial drop in parking demand and is a very conservative assumption (a high rate of diversion was selected to ensure that the model does not overstate the parking demand or revenue potential). A price elasticity of 10% (a 10% demand reduction for every 100% increase in price) was then used for subsequent diversion calculations whenever parking prices are raised.

The model does not assume, however, that all drivers "diverted" by parking prices simply stop coming downtown. The phasing of pricing and the price tiering between areas is intended to provide an opportunity for "diverted" parking demand to shift to other free or lower priced locations. 75% of the parking demand diverted from on-street meters in phase 1, for example, is assumed to divert to free or lower priced parking areas throughout the downtown. The remaining 25% of diverted drivers are assumed to avoid the downtown entirely, take an alternate mode, or park outside of the commercial area of the downtown captured in the model. As parking pricing spreads and prices increase, the percentage of trips that are diverted to other parts of the downtown is assumed to fall. By the time pricing is implemented for the Phase-2 off-street parking, for example, 100% of diverted demand is assumed to leave the downtown entirely since there are no longer any opportunities for free or lower cost parking remaining.

Parking Revenue Calculations

Calculations of parking revenue from pricing are relatively straightforward. The estimated average hourly parking demand for each area is multiplied by the appropriate hourly price and is then multiplied by 9 for the total number of priced hours in the day. This number is then multiplied by 249 assumed enforcement days to yield an annual total. The raw annual total is then reduced to account for a number of factors. First, 5% is taken off to account for employees parking with employee permits (for

the purposes of modeling, the employee permit program was assumed to continue through pricing. It is assumed, however, that the City would cap the total number of permits issued). 5% is roughly equivalent to the percentage of cars displaying permits that where observed in the downtown core on a weekday in Task 1. Revenue from employee permit sales is captured within the PMAD revenues. The total amount is then reduced by an additional 10% to account for collectively cars with handicap placards, fee evasions, meter malfunction, and any other reasons why revenue would not be collected from a car parked in a paid space. Finally, it is assumed that 50% of payment transactions will be made using a credit card (it is assumed that all installed payment equipment will accept credit cards) and that this 50% of transactions will be subject to a 5% fee. Table 3.2.19 outlines these revenue calculation assumptions.

Table 3.2.19: Pricing Revenue Calculation Assumptions

Assumption	Phase 1 & 2 Estimates
Base revenue calculation	Price x average hourly demand x 9 hours x 249 enforcement days
Reduction for cars with employee parking permits	Equivalent to a 5% reduction in revenue
General reduction	10% reduction (handicap placards, non-payment violations, meter malfunctions)
Credit card transaction fees	5% reduction of 50% of payments

Enforcement of Parking Pricing

The introduction of parking pricing to the downtown assumes the adoption of a more targeted enforcement model similar to the one described for the RPP program. It is also assumed that this enforcement model would undergo a phased introduction in conjunction with current enforcement activities. Thus existing downtown enforcement activities and citation revenues (currently captured as "general" parking revenues and expenditures) would be reduced by 50% with the introduction of Phase 1 pricing, and by a further 50% with the introduction of the Phase 2 pricing. This remaining low level of "general" enforcement activity would be targeted towards those areas not covered by RPP or pricing and would focus on parking violations not related to time restrictions or pricing and more difficult to integrate into a structured enforcement beat (parking in loading or restricted zones, for example). Table 3.2.19 outlines assumptions related to enforcement and citations.

Table 3.2.19: Permit Program Citation and Enforcement Assumptions

Assumption	Phase 1 Estimate	Phase 2 Estimate
Police Sgt hours per enforcement day	2	4
Police Assistant hours per enforcement day	8	16
Records Specialist hours per enforcement day	0.5	1
Enforcement days per year	249	249
Enforcement Equipment and Supplies	Equivalent to 10% of annual personnel costs	Equivalent to 10% of annual personnel costs
Citations issued per Police Assistant Hour	3.6	3.6
Average revenue per citation (2010 dollars)	$32.4	$32.4
Citations issued annually	7171	14342
Processing and Court fees	Equivalent to 10% of annual citation revenue	Equivalent to 10% of annual citation revenue
Reduction in existing number of citations issued as new enforcement program supplants existing one	50%	Another 50% (equivalent to 25% of original number)
Reduction in existing enforcement and citation processing costs as new enforcement program supplants existing one	50%	Another 50% (equivalent to 25% of original number)

Parking Pricing Costs

Finally, implementing pricing will involve both initiation and ongoing costs. Start up costs for a pricing program include substantial amount of (what is assumed here to be) public works staff time to design

and implement changes, training of enforcement and maintenance personnel, and the procurement of parking payment equipment and signage. Table 3.2.20, below, outlines assumed pricing program initiation costs. Training and administrative initiation costs for Phase 2 are assumed to be lower since many of the procedures and policies related to downtown pricing will already be developed.

Table 3.2.20: Pricing Program Initiation Requirements

Assumption	Phase 1 Estimate	Phase 2 Estimate
Administrative time (primarily public works staff with participation by planning and finance)	540 hours	286 hours
Maintenance and collections staff training	80 hours	40 hours
Enforcement staff training	80 hours	80 hours
Instructional Signage	59 signs	103 signs
Enforcement vehicles	1 vehicle	1 vehicle
On-street multi-space meters ($10,000 each in 2011 dollars)	27	47
Off-street pay-by-space payment stations ($35,000 each in 2011 dollars)	8	14

Ongoing parking pricing costs are assumed to include enforcement, collections and repairs staff, administration, minor repairs, and payments into a replacement reserve fund to cover upgrading of payment technology every 10 years.

Table 3.2.21: Pricing Program Ongoing Requirements

Assumption	Phase 1 Estimate	Phase 2 Estimate
Administration and Review	29 hours per month, primarily finance and public works staff	29 hours per month, primarily finance and public works staff (administration requirements not assumed to be directly related to number of priced spaces)
Direct Enforcement Costs	10.5 hours per enforcement day including supervision and records. Allocation for equipment included	21 hours per enforcement day including supervision and records. Allocation for equipment included
Collections and Repairs	12 hours per week assumed (8 hours collection staff, 4 hours repair staff)	24 hours per week assumed (16 hours collection staff, 8 hours repair staff)
Minor repairs	Annual allowance set at 2% of installed cost of all equipment and signage	Annual allowance set at 2% of installed cost of all equipment and signage
Meter replacement reserve	Based on installed cost of meters and assuming 10-year life span	Based on installed cost of meters and assuming 10-year life span

Table 3.2.22 (presented on the following three pages) provides a summary of the "Alternative Financial Scenario 2" projections of all current parking revenues and expenditures over the next 30 years. The table includes the financial analysis of both the hypothetical RPP and pricing programs' financial performance (based on all of the above assumptions) and shows how they integrate with the larger set of downtown parking finances. The first part of the table shows revenues and expenditures as projected for the next five years (fiscal year 2012 through 2016) and the second shows revenues and expenditures for years 2017-2021 (an additional 5 years of data have been included given the length of the phased implementation timeline for parking pricing). The third part of the table shows the longer range projections of fiscal years 2021 through 2041 at five year intervals. All projections are shown rounded to the nearest $100. Note also that some existing parking revenues and expenditures are shown in summary form only to keep the size of the table manageable. It is important to emphasize that while these projections are based on sound data and assumptions, they are only projections and involve a substantial degree of uncertainty, particularly in more distant future years.

Table 3.2.22 offers a number of important conclusions regarding the possible financial outcomes of initiating a more rigorous parking management approach. As Task 1 and Task 2 have shown, downtown Mountain View has a very high level of parking demand and given the large number of City owned parking spaces there is substantial potential to generate revenue. In fiscal year 2013, when the first phase of the pricing program was modeled for initiation, an estimated $686,000 in new revenue is generated by the pricing program (some $440,000 directly through pricing and $246,000 from new citations related to increased enforcement). This number is projected to increase to $1,550,000 in fiscal year 2016 (with $766,000 coming directly from parking charges and $785,000 coming from new citation revenue).

As noted, a comprehensive parking pricing program is also quite costly to implement and operate. Phase 1 initiation costs are estimated at $693,000 in 2013 and Phase 2 costs will require some $1,186,000 in fiscal year 2016. Operating costs for a pricing program are also high, requiring $245,000 in 2013 and $722,000 once Phase 2 begins in 2016. Nonetheless, these increases in cost are far outweighed by the revenue gains resulting from pricing and increased citation revenue. In 2017, once the program is fully underway and program initiation costs are excluded, parking as a whole (including pricing, RPP, PMAD, and general parking activities) in downtown Mountain View is projected to have a revenue balance of over $291,000 year- a surplus that is expected to increase significantly along with rising parking prices.

Table 3.2.22: Alternative Financial Scenario 2 Outcomes

	Base Year Estimate					
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Revenues						
PMAD Revenues						
Total PMAD Revenues	430,800	435,458	440,209	445,055	449,998	455,040
General Downtown Parking Revenues						
Total General Revenues	128,670	131,243	133,868	136,546	139,277	142,062
RPP Program Revenues						
Annual Permit Sales	-	13,560	14,070	14,580	44,730	52,787
Guest Permit Sales	-	3,254	3,377	3,499	10,735	12,669
RPP-related Parking Citations	-	40,293	41,099	41,921	117,587	119,939
Total RPP Revenues	-	-	58,545	60,000	173,053	185,395
Pricing Program Revenues						
On-Street Meters	-	-	184,945	188,734	192,523	350,580
Off-Street Lots & Garages	-	-	254,908	260,131	265,353	414,659
Pricing-related Parking Citations	-	-	246,592	251,524	256,554	785,056
Total Pricing Revenues	-	-	686,445	700,388	714,430	1,550,295
Total Parking Revenues	**$ 559,470**	**566,701**	**1,319,068**	**1,341,989**	**1,476,758**	**2,332,792**
Expenditures						
PMAD Expenditures						
Total Operational PMAD Expenditures	306,100	311,516	317,033	322,654	328,379	334,212
Total Non-Operational PMAD Expenditures	40,000	40,000	40,000	40,000	40,000	40,000
Total PMAD Expenditures	346,100	351,516	357,033	362,654	368,379	374,212
General Downtown Parking Expenditures						
Total General Expenditures	438,526	447,296	456,242	465,367	474,675	484,168
RPP Operating Costs						
Administration	-	14,021	14,302	14,588	43,134	43,996
Supplies	-	3,596	3,668	3,741	9,124	9,307
Enforcement and Citation Processing	-	70,572	71,983	73,423	212,253	216,499
Signage & Equipment Maintenance	-	12,087	12,329	12,575	37,127	37,870
Total RPP Operating Costs	-	100,276	102,282	104,327	301,639	307,672
RPP Program Initiation Costs						
Administration	-	15,565	-	-	35,789	-
Enforcement Staff Training	-	5,386	-	-	1,689	-
Signage & Equipment	-	92,310	-	-	182,390	-
Total Program Initiation Costs	-	113,261	-	-	219,867	-
Pricing Program Operating Costs						
Administration	-	-	21,836	22,272	22,718	46,344
Enforcement	-	-	160,406	163,615	166,887	510,674
Maintenance & Collections	-	-	25,319	25,826	26,342	80,607
Minor Repairs	-	-	12,859	13,117	13,379	36,832
Replacement Reserve	-	-	67,210	68,554	69,925	190,344
Total Pricing Operating Costs	-	-	287,630	293,383	299,251	864,801
Pricing Program Initiation Costs						
Administration	-	-	41,651	-	-	22,776
Enforcement Staff Training	-	-	8,739	-	-	3,445
Meters, Signage & Equipment	-	-	642,967	-	-	1,159,285
Total Program Initiation Costs	-	-	693,357	-	-	1,185,506
Total Parking Expenditures	**$ 784,626**	**1,012,349**	**1,896,545**	**1,225,731**	**1,663,811**	**3,216,359**
Net Revenues & Sources Over (Under)						
PMAD	84,700	83,942	83,176	82,402	81,619	80,828
General	(309,856)	(316,053)	(322,374)	(328,822)	(335,398)	(342,106)
RPP Program	-	(213,537)	(43,736)	(44,328)	(348,453)	(122,277)
Pricing Program	-	-	(294,543)	407,005	415,179	(500,012)
All Downtown Area Parking	**$ (225,156)**	**(445,648)**	**(577,478)**	**116,257**	**(187,053)**	**(883,567)**

Table 3.2.22: Alternative Financial Scenario 2 Outcomes (Cont)

	Base Year Estimate					
	FY 2011	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Revenues						
PMAD Revenues						
Total PMAD Revenues	430,800	460,183	465,429	470,779	476,237	481,804
General Downtown Parking Revenues						
Total General Revenues	128,670	144,903	147,801	150,757	153,773	156,848
RPP Program Revenues						
Annual Permit Sales	-	53,658	54,528	55,399	56,270	64,779
Guest Permit Sales	-	12,878	13,087	13,296	13,505	15,547
RPP-related Parking Citations	-	122,338	124,785	127,280	129,826	132,422
Total RPP Revenues	-	188,873	192,400	195,975	199,600	212,748
Pricing Program Revenues						
On-Street Meters	-	351,186	464,133	464,932	465,731	468,508
Off-Street Lots & Garages	-	415,376	617,083	618,146	619,209	622,901
Pricing-related Parking Citations	-	800,757	816,772	833,107	849,769	866,765
Total Pricing Revenues	-	1,567,318	1,897,988	1,916,186	1,934,710	1,958,174
Total Parking Revenues	**$ 559,470**	**2,361,278**	**2,703,618**	**2,733,698**	**2,764,320**	**2,809,573**
Expenditures						
PMAD Expenditures						
Total Operational PMAD Expenditures	306,100	340,155	346,208	352,375	358,658	365,060
Total Non-Operational PMAD Expenditures	40,000	40,000	40,000	40,000	40,000	40,000
Total PMAD Expenditures	346,100	380,155	386,208	392,375	398,658	405,060
General Downtown Parking Expenditures						
Total General Expenditures	438,526	493,851	503,728	513,803	524,079	534,561
RPP Operating Costs						
Administration	-	44,876	45,774	46,689	47,623	48,576
Supplies	-	9,493	9,683	9,876	10,074	10,275
Enforcement and Citation Processing	-	220,828	225,245	229,750	234,345	239,032
Signage & Equipment Maintenance	-	38,627	39,400	40,188	40,992	41,812
Total RPP Operating Costs	-	313,825	320,102	326,504	333,034	339,694
RPP Program Initiation Costs						
Administration	-	-	-	-	-	-
Enforcement Staff Training	-	-	-	-	-	-
Signage & Equipment	-	-	-	-	-	-
Total Program Initiation Costs	-	-	-	-	-	-
Pricing Program Operating Costs						
Administration	-	47,271	48,217	49,181	50,165	51,168
Enforcement	-	520,887	531,305	541,931	552,770	563,825
Maintenance & Collections	-	82,219	83,863	85,541	87,251	88,996
Minor Repairs	-	37,569	38,320	39,087	39,868	40,666
Replacement Reserve	-	194,150	198,033	201,994	206,034	210,155
Total Pricing Operating Costs	-	882,097	899,739	917,733	936,088	954,810
Pricing Program Initiation Costs						
Administration	-	-	-	-	-	-
Enforcement Staff Training	-	-	-	-	-	-
Meters, Signage & Equipment	-	-	-	-	-	-
Total Program Initiation Costs	-	-	-	-	-	-
Total Parking Expenditures	**$ 784,626**	**2,069,928**	**2,109,777**	**2,150,415**	**2,191,859**	**2,234,124**
Net Revenues & Sources Over (Under)						
PMAD	84,700	80,029	79,221	78,404	77,579	76,744
General	(309,856)	(348,948)	(355,927)	(363,046)	(370,306)	(377,713)
RPP Program	-	(124,952)	(127,702)	(130,529)	(133,433)	(126,947)
Pricing Program	-	685,222	998,249	998,452	998,622	1,003,364
All Downtown Area Parking	**$ (225,156)**	**291,351**	**593,841**	**583,282**	**572,461**	**575,449**

Table 3.2.22: Alternative Financial Scenario 2 Outcomes (Cont)

	Base Year Estimate					
	FY 2011	FY 2021	FY2026	FY2031	FY2036	FY2041
Revenues						
PMAD Revenues						
Total PMAD Revenues	430,800	481,804	511,353	543,977	579,997	619,766
General Downtown Parking Revenues						
Total General Revenues	128,670	156,848	173,173	191,197	211,097	233,068
RPP Program Revenues						
Annual Permit Sales	-	64,779	77,685	91,606	109,179	128,899
Guest Permit Sales	-	15,547	18,644	21,985	26,203	30,936
RPP-related Parking Citations	-	132,422	146,205	161,422	178,223	196,773
Total RPP Revenues	-	212,748	242,534	275,013	313,605	356,608
Pricing Program Revenues						
On-Street Meters	-	468,508	595,902	768,382	1,015,747	1,270,450
Off-Street Lots & Garages	-	622,901	843,232	1,069,368	1,498,446	1,938,894
Pricing-related Parking Citations	-	866,765	956,978	1,056,582	1,166,551	1,287,967
Total Pricing Revenues	-	1,958,174	2,396,113	2,894,331	3,680,745	4,497,311
Total Parking Revenues	**$ 559,470**	**2,809,573**	**3,323,173**	**3,904,518**	**4,785,444**	**5,706,753**
Expenditures						
PMAD Expenditures						
Total Operational PMAD Expenditures	306,100	365,060	398,916	436,086	476,902	521,734
Total Non-Operational PMAD Expenditures	40,000	40,000	40,000	40,000	40,000	40,000
Total PMAD Expenditures	346,100	405,060	438,916	476,086	516,902	561,734
General Downtown Parking Expenditures						
Total General Expenditures	438,526	534,561	590,198	651,626	719,448	794,329
RPP Operating Costs						
Administration	-	48,576	53,631	59,213	65,376	72,181
Supplies	-	10,275	11,345	12,526	13,829	15,269
Enforcement and Citation Processing	-	239,032	263,910	291,378	321,705	355,189
Signage & Equipment Maintenance	-	41,812	46,163	50,968	56,273	62,130
Total RPP Operating Costs	-	339,694	375,050	414,086	457,184	504,768
RPP Program Initiation Costs						
Administration	-	-	-	-	-	-
Enforcement Staff Training	-	-	-	-	-	-
Signage & Equipment	-	-	-	-	-	-
Total Program Initiation Costs	-	-	-	-	-	-
Pricing Program Operating Costs						
Administration	-	51,168	56,494	62,374	68,865	76,033
Enforcement	-	563,825	622,508	687,300	758,834	837,814
Maintenance & Collections	-	88,996	98,259	108,486	119,777	132,244
Minor Repairs	-	40,666	44,898	49,571	54,731	60,427
Replacement Reserve	-	210,155	232,028	256,177	282,840	312,279
Total Pricing Operating Costs	-	954,810	1,054,187	1,163,908	1,285,048	1,418,797
Pricing Program Initiation Costs						
Administration	-	-	-	-	-	-
Enforcement Staff Training	-	-	-	-	-	-
Meters, Signage & Equipment	-	-	-	-	-	-
Total Program Initiation Costs	-	-	-	-	-	-
Total Parking Expenditures	**$ 784,626**	**2,234,124**	**2,458,352**	**2,705,706**	**2,978,583**	**3,279,628**
Net Revenues & Sources Over (Under)						
PMAD	84,700	76,744	72,436	67,891	63,095	58,032
General	(309,856)	(377,713)	(417,025)	(460,430)	(508,351)	(561,261)
RPP Program	-	(126,947)	(132,516)	(139,072)	(143,579)	(148,160)
Pricing Program	-	1,003,364	1,341,926	1,730,423	2,395,697	3,078,514
All Downtown Area Parking	**$ (225,156)**	**575,449**	**864,821**	**1,198,812**	**1,806,862**	**2,427,125**

3.3: Parking Pricing and Residential Permit Discussion

The following report section presents a more detailed discussion of both parking pricing and residential permit programs. Where Task 3.2 modeled the financial outcomes related to the hypothetical implementation of these programs in Downtown Mountain View, describes how these kinds of parking programs work in more narrative detail. The first portion of the analysis focuses on parking pricing. It draws on academic research to identify and discuss potential negative economic impacts that might result from the implementation of paid parking and also discusses how paid parking and parking management can be effectively used to enhance the economic vitality of a business district.

The second section of the analysis examines residential permit parking programs in detail. These programs are a common and effective means for preserving neighborhood parking. This analysis will evaluate the costs and implications associated with developing such a program using examples of residential permit programs that have been used effectively in other comparable cities.

Parking Pricing

A Brief History of Paid Public Parking

Paid and managed parking evolved in downtowns shortly after World War II in areas that were built around transit and had limited space for development. Public and private interests alike developed downtown parking lots and structures, but the expense of these facilities dictated that parking fees be collected to offset the high cost of providing the parking. Parking districts and parking authorities were formed to fund the construction of new public parking using the revenues from existing parking facilities. Parking meters were commonly used for managing on street parking in many downtowns at this time. In some cases businesses assessed themselves to pay for the parking, so that their customers would not have to pay. While it was noticed that paid parking had the management benefits of increasing turnover and reducing demand, the primary purpose of paid publicly owned parking during this era was to cover the costs of building and operating the parking system.

In the 1970's, publicly owned parking systems in downtown business districts were maturing, but were beginning to see new competition in the form of free parking from suburban shopping centers. It was at this time that cities did not want to risk raising the price of parking or begin instituting paid parking with the thought of greater loss of business to shopping malls that provided access to abundant and free parking. With this lowering of visible parking costs to the consumer, an attitude of a free parking as a right rather than a privilege began to evolve.

A complacent attitude led to the decline of public parking systems into the 1980's as cities were unwilling to increase parking fees or cover costs for maintenance and their systems began to decline. Slowly however into the 1990's, some cities began to centralize parking operations and view parking as a profit center. With centralized control parking agencies were also effective in implementing public policies.

Meanwhile, as operations and administration evolved, there was a growing understanding that the management of parking and in particular the use of parking pricing had benefits well beyond those of the revenue that was generated. Growing concerns about air quality and fuel consumption prompted the institution of programs to reduce automobile use. This brings us to the current day where parking management is considered a powerful Transportation Demand Management (TDM) tool in addition to a

revenue source and its role in land use and economic development is beginning to be better understood.

The Relationship between Parking Pricing and Commercial Success

Downtown businesses often resist parking pricing because they believe it puts them at a competitive disadvantage with businesses in other locations that offer abundant, free parking.[5] Retailers, especially, may be more sensitive to parking restraint policies than other businesses because shoppers have a greater range of options available to them. There is relatively limited evidence that supports these concerns, therefore the impact of parking policies on urban vitality has become a highly contested topic.

The relationship between parking pricing and commercial success is complex because parking demand for an area is dependent on a variety of factors. One factor is the quality and breadth of retail offered in comparison to adjacent commercial centers. Another factor is that different travelers place a different price on convenience depending on their income and their personal value of time. The few parking studies that do examine this complex relationship are based on a single downtown or a handful of cities. The interpretation of their findings can be problematic as the successful application of parking pricing in one location does not guarantee that it will be successful in a different context.

Parking Pricing and Demand Elasticity

In general, drivers can be quite sensitive to the introduction of pricing and/or increase in pricing in a commercial district. This sensitivity is also referred to as price elasticity of demand. Several studies point to ranges of these sensitivities being based on the driver's trip purpose. Drivers that have the ability to shorten their trip such as shoppers and visitors are less price-sensitive than those that need to park for long periods of time such as commuters.[6]

A 1974 parking study conducted by Walter Kulash of a 25% area-wide parking tax in San Francisco showed that parking price elasticity had a greater effect on commuter parking demand than on shopper demand. Kulash calculated an average elasticity of -0.31 while the tax was at 25%, but when the tax dropped to 10%, commuter demand spiked to -0.91 and shopper demand did not change significantly.[7]

It should be noted that this demand elasticity has very much to do with context and the availability of other competitively priced options. A 1993 study by JHK & Associates indicated that if there is a shopping center with free parking in direct competition with a priced area, large reductions in parking demand (27% to 60%) may be attributed to drivers avoiding paid parking and diverting to the shopping center. Without diversion, vehicle trip reduction was shown to decrease 7.1% to 10.5% with an increase

[5] Victoria Transport Policy Institute. (2010). Parking Pricing: Direct Charges for Using Parking Facilities. http://www.vtpi.org/tdm/tdm26.htm

[6] TCRP Report 95: Chapter 13 Parking Pricing and Fees: Traveler Response to Transportation System Changes. 2005.

[7] Kulash,D. Parking Taxes as Roadway Prices: A Case Study of the San Francisco Experience. TheUrban Institute, Paper 1212-9, Washington, DC (1974).

in parking charges from no charge/nominal to up to 50 cents.[8] Larger reductions in parking demand can also be attributed to shifts to alternate modes of transportation where there is a supportive network.

Summaries of additional prominent studies documenting driver responses to paid parking in commercial district are provided below. The majority of the summaries are pulled from a peer-reviewed paper reviewing the evidence base of parking policies. The paper provided a review of the literature relating to the behavioral response of travelers to a series of real and hypothetical commuter, leisure and shopping and residential parking policies. The author, George Marsden from the University of Leeds, speculates that parking policies may be of lower importance in determining the choice of which shopping center to visit than other factors. In general, it appears the effect of parking policies depended heavily upon the context of the districts in which it was applied. Overall trips to commercial districts were not diverted, but trip patterns changed. Patrons were diverted to alternative modes where they were available and lower priced satellite parking when it was provided.

- Still and Simmonds (2000) reviewed the empirical and modeling evidence on the relationship between parking restraint policies and urban vitality. The authors found that although "behavioral and attitudinal studies tend to conclude that strong relationships exist (between parking provision and economic vitality), aggregate statistical studies find only a very weak relationship" (Ibid., p313).
- Henscher and King (2001) conducted a stated preference study of casual visitors to the central business district in Sydney and used a nested logit model to illustrate the potential impact of pricing on commercial district parking demand. In the study, different options were presented to respondents regarding where they might park, whether they would park and change mode, change mode, or not travel to the CBD at all. A range of parking prices was presented to the respondents and different walk times were also assigned to the alternative parking options. The study concluded that an increase in parking price would lead to a noticeable relocation of parkers from "close in" to elsewhere in the CBD. Other, more price sensitive parkers have a greater tendency to park further out or shift to public transport use. Under all the scenarios examined, there was very little reduction in the total number of journeys made to the CBD.[9]
- Lockwood (2003) conducted a survey in the UK of economic performance of five different types of town centre: district; sub-regional; regional; major regional; and major city. The survey measured availability of parking spaces, their convenience, price, and type of pay system. The results for the economic performance (shops with growing or declining sales) were plotted against parking spaces and convenience. Comparing three different types of centre (major

[8] JHK & Associates and K.T. Analytics, Inc., "Analysis of Indirect Source Trip Activity: Regional Shopping Centers." Phase III Market Research and Transportation Management Services. Prepared for California Air Resources Board, Sacramento, CA (November, 1993).

9 David Hensher and Jenny King (2001), "Parking Demand and Response to Supply, Pricing and Location in Sydney Central Business District," Transportation Research A, Vol. 35, No. 3, March 2001, pp. 177-196.

district, sub-regional, and regional) alongside each other shows that there appears to be no systematic relationship between the provision and convenience of parking spaces at different types of urban centers and their economic performance.[10]

- Kelly and Clinch (2009) conducted a study of actual behavior in a commercial shopping district in Dublin, Ireland. They used revealed preference data obtained from parking records to calculate elasticity of demand for parking space and controlled for income changes during the study period. In terms of reduced parking frequency, the average price elasticity of demand reported is −0.29 meaning that for every 100% increase in parking price, parking demand was reduced by 29%. [11]

The consistent conclusion among these authors is the idea that parking pricing is not likely to be the ultimate determining factor of downtown economic success. Many authors cite that the evidence to date is inconclusive and in many instances does not support, or provide evidence counter to, the assumption that parking restraint makes downtowns less attractive. Further research is needed to understand how context specific the findings of the studies may be. Until then only tentative policy implications can be drawn.

These study findings support an access management perspective for parking supply in commercial districts. While many of these examples are located overseas, they hold common truths that can be applied to commercial districts throughout the United States and California. Patrons desire access to the commercial downtown/districts for various purposes. These purposes include shopping, dining, entertainment, local employment and long distance commuting.

Each of these purposes translate to a different need profile for access to the downtown and resulting sensitivities and tolerances for parking pricing. When parking pricing is introduced to a commercial district, some users may be willing to shift to other modes of transportation (local employees), others may be willing to shift to satellite parking (commuters and employees). Short term visitors (shoppers and diners) tend to be less sensitive as pricing tends to increase parking turnover and overall availability and the cost is a small part of their overall transaction. In some commercial districts, parking fees are often validated by local businesses to encourage sensitive consumers to patronize the district.

Depending upon the nature of the district, access may come in many forms such as free or paid parking, satellite parking, transit service, bike and pedestrian facilities. Depending upon the user profile of the district access needs will vary along with tolerances and sensitivities towards pricing.

10 Marsden, G.R. (2006). The Evidence Base for Parking Policies – a review. Transport Policy, 13(6), pp.447-457

11 Boarnet, M., Handy S., Spears, S. (2010) Draft Technical Background Document on the Impacts of Parking Pricing Based on a Review of the Empirical Literature.

Residential Permit Parking Programs

Residential parking permits are a common parking management tool used to give the residents of an area priority use of on-street parking near their homes. Residential parking permit programs (RPP) are typically implemented for neighborhoods impacted by overflow parking from schools, retail, commercial, business districts, or transit stations. The following report section describes the different elements common to many residential permit parking programs and compares the approaches of a number of Bay Area and Northern California cities where such programs are in use.

Uses of RPP Programs

While paid public parking has existed for decades, residential permit parking programs are a newer concept and are unusual in that they give certain individuals sustained preferential access to public space. The Supreme Court ruling in the case Arlington County Board v. Richards, 1977, No. 76-1418 established the legal precedent for permit parking saying that it was permissible to restrict commuter parking with residential permits because of the environmental benefits and that it did not violate the Equal Protection Clause of the 14th Amendment to give residents free permits. Similarly, the California Vehicle Code Section 22507 permits the designation of certain streets upon which preferential parking privileges are given to residents or merchants adjacent to the streets for their use and the use of their guests.

Permit programs are an adaptable tool and are used in a variety of different contexts. Cities such as Berkeley, Santa Clara, Santa Cruz, Davis, San Jose, and Palo Alto all use residential permit districts in neighborhoods around universities where students and university employees often park on residential streets. Even cities without major universities, such as Cupertino and Redwood City, establish permit districts around community colleges, high schools, and elementary schools (See Table 3.3.1). Other examples include the City of San Jose, which has residential permit zones in areas around the Convention Center, Civic Center, and Flea Market—and the City of Davis, which created a permit zone downtown to address parking problems associated with Amtrak commuters. Similar to downtown Mountain View, the City of Davis has a rail station (Amtrak) adjacent to their downtown. The Amtrak lot is the only lot in the area which charges for parking, resulting in spillover issues when commuters seeking free parking find spaces in the nearby residential neighborhood across the street. A similar example of establishing permit zones around transit lines is the City of Berkeley, which has a two permit zones (Zones J and M) focused around the Ashby BART station.

Table 3.3.1 provides examples of 12 Bay Area and Northern Californian cities with RPP's and details the nature of the permit areas that make up their programs.

Table 3.3.1: Examples of RPP Uses

City	General Permit Areas
San Jose	16 zones, including areas around University, Convention Center, Civic Center, Flea Market
Oakland	12 zones, including the areas around Jack London District, transit hubs, Kaiser hospital, major business districts
Berkeley	14 zones, including many areas around the University of California Berkeley
Santa Clara	No organization by zone, includes areas around Santa Clara University and car dealerships
San Mateo	13 zones, including neighborhoods impacted by overflow parking from schools, retail, commercial or business districts
Redwood City	2 zones, including areas around high school and hospital
Davis	12 zones, including areas around the University of California, Davis and the High School
Palo Alto	1 zone in the College Terrace neighborhood
Santa Cruz	7 zones, including areas around the beach, UC Santa Cruz, auto dealerships and medical clinic, County courthouse and offices, and the downtown
Cupertino	No organization by zone, includes areas around shopping and restaurants, De Anza College, community center and elementary schools
Menlo Park	Overnight permits for certain apartment buildings zoned R3, daytime permits available for three areas
Los Gatos	6 zones, including areas near the downtown

RPP Formation

Different cities establish different guidelines for determining if an area will benefit from and is eligible for a residential permit program. In general, residents requesting an area to be designated as a residential parking permit zone typically need to fill out a petition and obtain a certain percentage of signatures from residents on that particular block or neighborhood. The petition is then reviewed by the City for approval or denial. Approval is generally dependent on 1) if there is proof that the area is impacted by non-resident parkers, and 2) if a majority of the residents in that area agree to the program.

The City of Berkeley requires at least 51% of the residential addresses of the proposed area to sign the petition form and also conducts a parking survey to assess whether parking congestion exceeds 75% of the available spaces in the area. The City of Menlo Park also requires at least 51% of the addresses to sign the petition and conducts a survey to verify that at least 25% of on-street vehicles are out-of-area vehicles parking for extended periods of time. The City of San Mateo goes into further detail by requiring a mid-week parking survey to indicate that 75% of all on-street parking spaces within the proposed area are occupied during any two one-hour periods between 8:00 a.m. and 6:00 p.m. Once the permit area is established, it will sunset in 10 years unless 67% or more property owners show interest in maintaining the program. In San Jose, the City's policy stipulates that for an area to be considered for a permit district, it should be primarily residential with the majority of residences owner occupied. The area should also be sufficient in size to eliminate rather than relocate the parking problem.

Other cities, like Redwood City, do not outline a specific process in their ordinance and instead consider establishment of residential permit zones on a case by case basis.

Program Implementation

Implementation of an RPP requires making detailed decisions regarding determination of permit boundaries, time and days of enforcement, method of signage, permit fees and expiration periods, and permits allowed per household. Determining where permit zones should start and stop to effectively address the parking problem involves thinking about adjacent land uses, parking policies in the neighboring areas, and whether the zone should stop at mid-block or continue to the street corner. The appropriate dimensions for an RPP vary depending on the situation but should be efficiently tailored to address the parking problem while still including a large enough area for efficient enforcement and administration.

The time limit selected for an RPP should also reflect the parking issue the zone is trying to address. It is important to set the duration allowed for non-permit parkers so that only the undesired parking users are excluded (e.g. employee, commuter, student) thus maintaining efficient use of the parking spaces for as many groups as possible as long as they are not causing parking "problems". For example, establishing a 5-hour parking restriction near a transit station would effectively prevent commuters from parking on-street but would still allow for street parking to be utilized by a wide range of other users.

A number of cities offer examples of how to tailor a residential permit program to a particular purpose. The City of San Jose tailors some areas around San Jose State University to the school year. These permit areas are in effect from September 1st to June 1st. The permit areas are enforced 8:00 a.m. to 8:00 p.m., Monday through Thursday, and 8:00 a.m. to 4:00 p.m. on Fridays. This could indicate that fewer students have late classes on Friday evenings and thus do not generate as much parking demand as during the rest of the week. The City of San Jose also established permit restrictions for areas around the Flea Market, running from 10:00 a.m. to 6:00 p.m. on weekends and holidays. The City of San Mateo has developed different standard permit restriction templates for both school and retail areas. Permit areas around school are enforced 8:00 a.m. to 4:00 p.m., Monday through Friday. Permit areas around retail/commercial/businesses are enforced 8:00 a.m. to 6:00 p.m., Monday through Saturday. Non-resident parkers who park in these areas during these times can only stay for 2 hours.

Cities can also prohibit non-resident parking all together in permit zones. The City of Davis established a residential parking permit zone for a neighborhood adjacent to an Amtrak station. Except for permit holders, no parking is allowed from 8:00 a.m. to 6:00 p.m., Monday through Friday. A blanket restriction on non-permit parking has the benefit of making enforcement much more efficient (since enforcement personnel only need to patrol once to issue a citation and do not have to chalk cars or record license plates). These kinds of blanket prohibitions are less desirable from a policy perspective, however, since parking is so heavily restricted that its use can become inefficient.

Permit Type, Fee, and Quantity

Residential permit programs typically include both annual resident permits and temporary guest passes. Typically residential permits are displayed as stickers and guest permits are displayed as hangtags. Depending on the physical permit type, permits can be hung from the rearview mirror, attached to the rear bumper, or placed on the dashboard or windshield. The City of Berkeley , for example, offers up to 20 daily scratcher permits a year for visitors where they scratch off the date, write down their license plate number, and leave it on their vehicle dashboard.

In a survey of 12 cities, mostly in the Bay Area, the annual amount charged by cities for resident permits ranged from no charge to $150 per year with all permits expiring in either one or two years. Visitor permits range from no charge to $50 for 14 days and are typically offered in daily, bi-weekly, or annual

increments. The cities of Cupertino and San Mateo offer both resident and visitor permits at no charge and are good for 2 years. The cities of San Jose, Davis, and Santa Cruz charge the same amount for both resident and visitor permits which last for a year, although San Jose also has some areas where permits are valid for two years. The City of Los Gatos chooses to charge residents $38 per permit each year, but offers two complimentary visitor permits with the purchase. Other cities, such as Berkeley, San Mateo, and Palo Alto, see no need to set a maximum number of permits and offer unlimited permits per household. The City of Santa Clara doesn't offer visitor permits at all.

Each city customizes the costs for permits, time valid, and maximum permits allowed per household based on the situation. The City of San Jose charges $30/year for permits around the university since the university operates on a yearly basis, and charges $30/2 years for permits in other zones. Some cities, such as Menlo Park, see a need to offer separate permits for daytime and overnight parking (see Table 3.3.2 on the following page).

Table 3.3.2: Permit Fee and Quantity

City	Permit Type	Permit Cost and Time Valid	Permits Allowed per Household
San Jose	Resident	$30/year or $30/2years	3-4
	Visitor	$30/year or $30/2years	2
Oakland	Resident	$35, $41, $53, or $150. Annual or semi-annual	3
	Visitor	$1/day, $5/14-days, $10/day, $50/14-days	5
Berkeley	Resident	$34.50/year	Unlimited
	Visitor	$2.25/1-day, $23/14-day	20 one-day/year, three 14-day/year
Santa Clara	Resident	$18/year	2
	Visitor	none	0
San Mateo	Resident	free/2years	Unlimited
	Visitor	free/2years	1
Redwood City	Resident	free/1year	3
	Visitor	Free/1year	10
Davis	Resident	$12/year	9
	Visitor	$12/year[1]	5
Palo Alto	Resident	$40/year	Unlimited
	Visitor	$5/1-day, $25/year	20 one-day/quarter 2 annual/year
Santa Cruz	Resident	$25/year	3 annual or 30 daily permits
	Visitor	$25/year	2
Cupertino	Resident	free/2years	5[2]
	Visitor	free/2years	2
Menlo Park	Resident	(overnight):$150/year, (Daytime) $15/year	3
	Visitor	$2/night	50 one-night/6 months
Los Gatos	Resident	$38/year	4
	Visitor	free/year	2

[1] annual guest permit may not be used over two-weeks consecutively, or over 72 hours in the H district

[2] resident needs to seek special permission for any additional vehicles above 5 per household

Program Administration and Funding

Residential Permit program administration involves two major responsibilities: issuing permits and enforcement. The Police Department is typically responsible for enforcement while the issuance of permits is handled differently by various cities. In the cities of Cupertino and San Mateo, the Public Works Department is responsible for issuing permits. In Berkeley, the Customer Service Center under the Finance Department issues the permits. In Menlo Park and Santa Clara, the police department is responsible issuing both permits and citations.

Residential parking permit program funding can come from permit sales, citation fees, or the General Fund. Cities handle the funding of RPP programs in different ways and most engaged during this study were not able to provide detailed breakouts of program cost relative to revenue generated. The general experience, however, is that Residential permit parking programs are not revenue neutral. Programs generally cannot be supported with permit fees alone and most cannot even be supported through the citation revenue they generate. Many cities, such as Redwood City, Los Gatos, San Mateo, and Cupertino, fund the permit program through the General Fund. In Santa Clara, revenue from permit sales and citation fees are earmarked to cover the costs for the enforcement officers, while the General Fund covers costs for the Traffic Engineering Division. The City of Berkeley Transportation Division staff estimates that permit and citation revenue covers about 50% of the costs of their permit program, while the General Fund covers the other 50%.

3.4: Options for New Parking Supply

The following analysis presents work developed by International Parking Design examining various options for the development of additional public parking supply in Downtown Mountain View. Given that any possible construction of parking is likely some years away, this analysis is primarily focused on evaluating the spectrum of costs associated with a wide range of different parking configurations. This section briefly discusses the different factors that affect the cost of parking and then presents data on the anticipated costs of constructing new parking supply in downtown Mountain View.

The Components of Parking Cost

The cost of supplying parking either in an above ground structure, below grade lot, or as part of a mixed use development will vary around a wide range of factors. While this analysis focuses primarily on determining the actual costs of parking construction, it is important to consider how construction costs relate to the more general set of factors that comprise the total cost of providing parking. The following brief analysis explains why parking is so expensive to provide and what kinds of factors can affect this cost. The cost of supplying parking is not limited to construction. Table 1 describes the full range of costs associated with providing parking in a structure or underground garage and details some of the different factors that contribute to each.

Table 3.4.1: Components of parking facility cost

Cost Component	Notes
Land	Land costs for a parking facility include the cost of acquisition as well as the costs of securing any easements or additional property necessary to build the parking facility.
Construction	Construction costs will include demolition and site preparation, basic construction costs, and substantial additional costs for improved architectural finishes and landscaping. Construction costs will also increase through contingency costs, contractor's overhead, and cost escalation during the course of construction. Actual construction costs will vary enormously depending on the facility's location, size, whether it is below or above grade, and how many levels it has. The level of aesthetic finishes on the exterior of a parking structure can also significantly increase construction costs.
Planning and Design	Planning and design "soft costs" can include initial demand and planning studies as well as surveying and soils engineering and architectural and structural engineering fees.
Financing Costs	Financing costs will vary depending on the mechanism used to finance construction but can include legal fees, the cost of securing and repaying bonds, and interest on construction loans. Between financing costs and planning and design expenses, Todd Litman of the Victoria Transportation Planning Institute estimates that "soft costs" can increase the cost of a parking facility by as much as 30-40% for a standalone project.12
Equipment and Furnishings	The level of equipment and furnishings provided within the structure including barrier gates, elevators, ticket spitters, and payment stations can range into the hundreds of thousands of dollars and can affect both the initial cost of a parking facility as well as upkeep and maintenance costs.

[12] Litman, Todd, "Transportation Cost and Benefit Analysis: Techniques, Estimates and Implications: Parking Costs." Victoria Transport Policy Institute. www.vtpi.org/tca/tca0504.pdf. 2005. Accessed September 11th, 2008.

Table 3.4.1 includes only those costs associated with the initial provision of parking. Operation and maintenance of parking facilities including security and cleaning, utilities, insurance, administration, and major and minor repairs are all significant ongoing sources of cost. Parking maintenance and operations costs can run anywhere between $200 and $100 per space depending on the context and level of services provided.

Key Variables: Efficiency and Cost per Square Foot

As the above discussion suggests, the cost of providing parking is determined by a wide range of considerations. Construction costs do play a major role in determining the initial cost of parking, however, and while many individual factors are involved in determining this cost, most can be conceptually grouped into two key variables. The cost of a new parking space is fundamentally determined by the square foot cost of construction and by the efficiency of the parking facility's design.

Cost per Square Foot

The cost per square foot of construction is a complicated determination that is affected by geographic location, materials cost, architectural elements, and soil conditions. Putting precise values on many of these variables lies beyond the scope of this analysis, but it is possible to develop and validate a reliable set of cost estimates using standard assumptions and a trusted set of references.

One contributor to the cost per square foot of a parking facility is the number of levels in the facility and whether they are above or below grade. High land costs may make it economically desirable to increase the number of levels in a parking facility either above or below grade, but adding levels also increases the square foot cost of construction. Costs of building below grade will vary based on the location of the water table, soil conditions, and the intended above ground use but will always be high compared to above grade construction. Poor soil conditions that require significant shoring, a high water table, or non-parking uses above the facility will all add substantially to the cost of providing below grade parking. Building many levels above ground can also increase construction costs, but this in unlikely to be a significant consideration for downtown Mountain View.

While it is widely accepted that below grade parking construction tends to be more expensive per square foot than above grade construction, the difference in cost lessens substantially when costs related to high end facades and aesthetic finishes are taken into account. The premium that the City of Mountain View places on the design and appearance of the Downtown's built environment are evident in the existing parking structures and it is assumed that any future construction would be held to a high aesthetic standard. Because underground levels of parking do not require a façade, windows, or other architectural detailing, the cost below grade construction is lower in this respect. Ultimately, for the size of the parking structures being considered, the number of levels involved, and the high aesthetic standards assumed, IPD's analysis indicates that above ground parking construction in downtown Mountain View will likely cost approximately $60 per square foot while below grade parking will be slightly more expensive at $65 per square foot.

Design Efficiency

In addition to square foot costs, the design efficiency of any parking facility built by the city will be the major variable in determining the cost of each additional parking space provided. Design efficiency describes the amount of built space within a facility dedicated to parking versus the total built square footage of the facility (including space used for aisles, ramps, structure, and landscaping). Efficiency is typically expressed as the ratio of parking spaces to total facility square footage or the number of square

feet per stall. Thus the amount of built space required to support one stall can range anywhere between 280 and 500 square feet, but a typical range for an efficient facility layout would likely result in 310 to 390 square feet per stall. While the efficiency of the parking structure may not directly affect total construction costs (since the facility itself could conceivably be of the same size and materials) it will have a tremendous impact on the unit cost of each individual parking space. Structures with large, rectangular footprints will tend to be the most efficient, while smaller structures with complex layouts will be less efficient and will have higher per-space costs. Construction changes in the efficiency of structure design have the potential to increase costs per space by as much as 60 – 80%. In the case of Downtown Mountain View, all parking options being considered assume relatively small footprints where a great deal of facility space is dedicated to structure and aisles. Thus all of the options being examined are likely to realize relatively high construction costs per space compared to much larger parking structures.

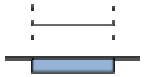
As IPD's analysis indicates, efficiency of design is a particularly important issue when considering the inclusion of retail or developing public parking as part of a mixed use option. Although the square foot construction cost of the parking in this kind of an arrangement may be the same as that seen in a dedicated structure, the layout's efficiency will likely be much lower. Fewer spaces placed above or below ground will require additional ramps and aisles for access and will thus raise the cost of each new space provided.

Parking Supply Options in Downtown Mountain View

IPD began their analysis by conducting an initial review of parking lots 4, 5, and 6. All three lots are City-owned surface parking facilities located southeast of Castro Street and surrounded by commercial uses. Based on their initial review, IPD determined that the differences in the size and arrangements of the three sites were minimal with respect to their ability to accommodate a parking structure. Based on this finding, and given that there is no clear or immediate plan to build a parking structure in the downtown, IPD focused their analysis on examining as wide range of physical parking configurations as possible using Lot 4 as a template.

A summary of their analysis is presented in table 3.4.1 on the following page. It identifies various feasible options for a parking structure and how they relate to each other in terms of number of spaces, levels, cost, and height.

Table 3.4.2: Summary of Construction Options for Lot 4 (Lot 5 and 6 Similar)

Option No.	Description	Visualization	Height Above Ground Level	No. of Spaces	No. of Net new Spaces	Building Area s.f.	Design Efficiency s.f./stall	Cost per s.f. (Hard Cost Only)	Construction Cost (Hard Cost Only)	Cost per Space (Hard Cost Only)	Cost per Net New Space (Hard Cost Only)
Free Standing Parking Structure											
1	4 Levels Above Ground		35’	368	280	145,337	395	$60/s.f.	$8,720,200	$23,700	$31,100
2	4 Levels w/1 Basement		25’	368	280	106,857 Above 38,480 Below 145,337 Total	395	$60/s.f. $65/s.f.	$8,912,600	$24,200	$31,800
3	5 Levels w/1 Basement		35’	467	379	144,581 Above 38,480 Below 183,061 Total	392	$60/s.f. $65/s.f.	$11,176,100	$23,900	$29,500
4	5 Levels w/2 Basements		25’	467	379	106,857 Above 76,060 Below 182,917 Total	392	$60/s.f. $65/s.f.	$11,355,300	$24,300	$30,000
Mixed-Use Parking Structure											
5	188-198 Space Above Grade w/Retail		34’	166	78	78,734+26,328 s.f. of Retail	474.3	Garage@ $60/s.f. Retail @ $200 s.f.	$4,724,000 + $5,266,000 ($9,990,000 Total)	$28,500	$60,600
6	188-198 Space Below Grade w/Retail Above		24’	155	67	79,213+24,58 8 s.f. of Retail	511	Garage@ $65/s.f. Retail @ $200 s.f.	$5,148,800 + $4,918,000 ($10,066,800 Total)	$33,200	$76,800

*Lot 5 approximately 80 spaces/level with Building Footprint 225’x126’; Lot 6 approximately 80 spaces/level with Building Footprint of 290’x120’

Although, all three lots are very close in terms of ground area, the lot configuration does differ between Lots 4, 5, and 6. Due to the site geometry and constraints, the parking space design efficiency between the three lots can vary from 392 s.f./space to over 400 s.f./space. Also, based on a decision on what the project scope is, in terms of retail, basement(s) and other uses, the design efficiency and cost of any structure will be further impacted. The construction costs identified are based on the current market conditions and the assumptions regarding below grade parking and aesthetic finishes discussed earlier. Based on the actual construction date of a potential project, these costs would require adjustments based on the rate of inflation to the mid-point of construction. The costs presented in Table 3.4.2 include construction costs only and exclude soft costs. Floor by floor conceptual layout drawing of all the options studied are provided in the Task 3 Appendix.

For the purposes of policy considerations, both the total construction cost and the cost per net new space are useful points of reference. Construction costs for all options range between $8.7 and $11.4 million for standalone structures and between $4.7 million and $5.1 million for the parking component of mixed use project with added public parking. The cost per net new space (the total new spaces minus the 88 spaces that currently exist on lot 4) hovers between $29,000 and $31,000 for free standing structures but skyrockets to between $60,000 and $76,000 for public parking incorporated into a mixed use development. Were soft costs added in to these totals (approximated here at 20% of hard costs), the total cost of building a standalone parking structure could be anywhere between $10.4 and $13.7 million and while the per space cost of standalone parking would be between $35,000 and $37,000 per space.

Task 4: Community Input

The following report presents a summary and analysis of findings from the two surveys that were conducted as part of the Downtown Mountain View Parking Study. The full responses to all survey questions including individual comments received are presented in the Report's Appendix.

In October and November of 2010, two different surveys were developed and administered to assess the parking habits and opinions of a variety of stakeholder groups in and around downtown Mountain View. The first survey involved an on-line questionnaire targeted towards downtown business owners and managers, property owners, and area residents that asked respondents to answer a variety of questions about their parking habits and opinions. The second survey was an in-person "intercept" survey that was conducted in the downtown during a Thursday mid-day and Friday evening in November. This shorter survey was developed to directly capture the parking habits and opinions of a cross section of downtown visitors during what had been observed to be the downtown's two busiest parking times. Collectively, the responses from these surveys suggest that there is a diversity of opinion about how well parking in the downtown currently works and what could be done to improve the system. The following is a brief, bulleted synthesis of key findings organized by user group:

Residents (Online Survey):

- Residents in and around the downtown are only partially reliant on street parking for their own vehicles but are almost entirely dependent on street parking for their visitors.
- Residents' perceptions of parking availability and issues vary significantly depending on their location. In general, residents living closer to the commercial core and in the neighborhood surrounding the Caltrain/JPB station encountered more difficulties parking and were significantly less satisfied with parking availability and current time restrictions.
- Resident reactions to the possibility of a permit program were mixed overall but were very positive in the commercial core and in areas near the Caltrain/JPB station.

Downtown Business Owners and Managers (Online Survey):

- More than two thirds of business owners and managers who responded to the survey did not have their own, off-street parking and relied on the public parking supply to accommodate the needs of themselves, their employees, and their customers.
- A slight majority of business owners described themselves as satisfied or very satisfied when asked about parking availability, parking enforcement, and the parking experiences of their employees and customers.
- Business owners reacted negatively to the idea of parking meters and ranked keeping parking free as their top parking priority for the downtown.

Downtown Employees (Intercept Survey):

- Downtown employees were more likely to park in private lots, spent less time searching for parking, and parked more quickly than the general population of downtown visitors.
- A majority of downtown employees said that they were satisfied or very satisfied with the availability of parking and the current system of parking restrictions

- Downtown employees ranked parking for free and being able to park for extended periods of time as their top priorities.

Downtown Visitors, Shoppers, and Diners (Intercept Survey):

- A majority of shoppers said that they intended to stay downtown for less than 1 hour while a majority of respondents who had come downtown to eat stated that they intended to stay between 1 and 2 hours. Shoppers and diners were more likely than employees to rely on public parking.
- A majority of both shoppers and diners were satisfied with the availability of parking and with current parking restrictions, but were not as strongly positive as downtown employees.
- Being able to quickly find a space near their destination was the top parking priority for both shoppers and diners.

4.1 Online Survey

The first survey undertaken was an online questionnaire soliciting input on a variety of topics related to parking in downtown. The survey was made available online in October of 2010, and generated 358 responses from Mountain View residents, business owners, commercial property owners, and others. This report provides a summary of key results from the survey, describing findings related to respondents' characteristics, parking behavior and experiences, satisfaction, and priorities. Survey results are only discussed here for the "targeted" groups of downtown residents and business owners (see below). A full set of survey responses is presented in the Appendix.

Survey Design and Methodology

The online survey was developed as a tool to collect a variety of information about parking in the downtown from several specific groups of stakeholders. Although the survey was open to all members of the public, the survey effort specifically targeted downtown commercial property owners, downtown business owners, and residents in the neighborhoods surrounding the downtown. This summary report focuses on the responses of residents and business owners. Since only five commercial property owners responded to the survey their results are not analyzed here. A complete reporting of all survey responses including those of commercial property owners can be found in the Appendix.

Target groups were notified of the survey in late September and early October through postcard mailings sent out by City staff and through the Old Mountain View neighborhood association newsletter. Postcards included a description of the parking study and survey, and provided the address for the online survey. All told, 3,063 postcard announcements were sent out by the City to a total of 1,610 apartments, 1,168 home occupants, and 285 downtown businesses and commercial property owners. 95 surveys were returned as undeliverable and 2,968 were successfully mailed. When a potential respondent went online they were first asked to self identify based on their primary interest in downtown parking. Table 4.1.1, below presents the distribution of responses by respondent categories:

Table 4.1.1: Respondent Categories

Respondent group	Response Percent	Response Count
Mountain View resident	83.0%	297*
Downtown business owner/manager	8.7%	31
Downtown commercial property owner	1.4%	5
Downtown employee	3.4%	12
Downtown Visitor	0.6%	2
Other (please specify)	3.1%	11
Total who answered question	358	

*Total includes 49 residents who later identified themselves as not living in study area and/or failed to complete the majority of the survey.

A precise response rate for the survey is difficult to calculate since the survey was open to the public and the survey link was announced in a variety of different contexts. 333 responses from specifically targeted groups (Mountain View residents, downtown business owners, and commercial property owners) were received out of 2,968 targeted mailings sent out yielding an approximate overall response rate of 11%. The response rate for residential surveys was 11% while the combined response rate for business and commercial property owners was 13%. As table 4.1.1 indicates, however, the total number

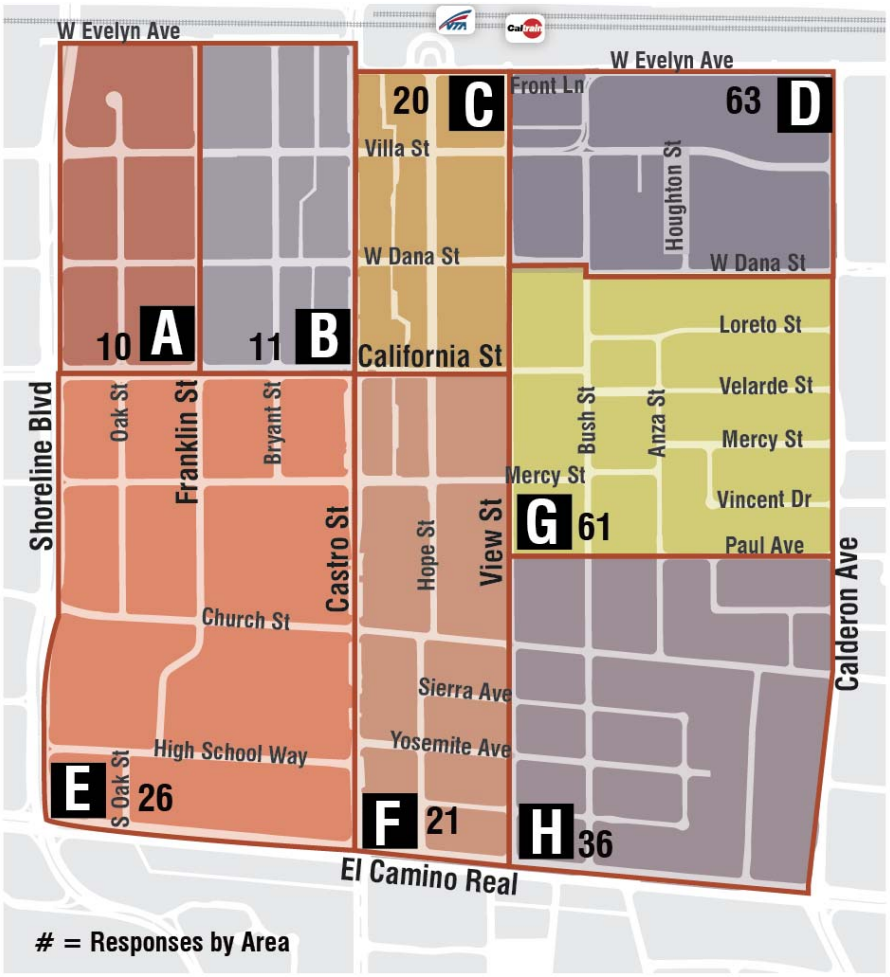
of business owners responding to the survey was fairly low (31 responses total). Results from these surveys are presented and discussed here but given the low total number of responses they are not cross-tabulated or analyzed by any subcategories.

Once survey respondents selected a category describing their interest in parking, the survey channeled them to a particular version of the survey. Respondents who identified as Mountain View residents were taken to one set of targeted questions while those who identified as business owners were taken to a different set, and those who identified as property owners were taken to another. Finally, respondents identifying themselves as a "non-targeted group" such as downtown employees, downtown visitors, or "other" were taken to a shorter, simplified set of questions that polled their opinions and priorities regarding parking in the downtown.

Downtown Residents

When respondents identified themselves as Mountain View residents, they were next asked to choose the area on a map (shown in Figure 4.1.1) that corresponded to the location of their residence. Respondents were also given the option to state that "the location of their residence" was not shown on the map. Out of 297 self-identified "Mountain View residents," 248 respondents selected one of the lettered areas on the map as their residence location. 45 respondents identified themselves as "Mountain View residents" but indicated that they did not live in any of the areas shown on the map (and thus took only an abbreviated version of the survey). Similarly, 4 respondents identifying as residents quit the survey before answering any questions related to parking and were not counted in the results presented below. Figure 4.1.1, on the following page, shows how these 248 respondents were distributed around the downtown.

Figure 4.1.1: Resident Responses by Area



For most of the following analysis and reporting of resident responses, all responses are shown as a single group regardless of area. For certain questions, however, responses have been broken out separately for areas "A," "B," "C," "D," and "G" as shown above to provide a sample of how responses varied from residents living especially close to Caltrain or the commercial center of downtown. Input received at public meetings and analysis of Task 1 parking utilization data suggest that residential parking in these areas may be significantly more impacted and it is important to understand if these residents have a different or unique perspective on downtown parking issues.

Resident Household Characteristics

The resident questionnaire began with several demographic questions related to details such as where respondents live, their housing type, their household size, and how many vehicles they owned. Survey respondents varied in the size of their household, with 39% living in a two person household, 23% living in a one person household, and 17% living in a three person household (see Table 4.1.2).

Table 4.1.2: Household Size

Household Size	Percent
1	24 %
2	39%
3	17%
4	14%
5 or more	6%

The majority of respondents (63%) described their residences as “detached, single family homes”, while 37% of those responding to the survey said that they lived in apartments, duplexes or townhomes.

Table 4.1.4: Type of Residence

Type of Residence	Percent
Detached, single family house	63%
Duplex or townhome	8%
Apartment or condominium in multi-unit building	29%

When asked about vehicle ownership, most respondent households (75%) owned either one or two vehicles. Over 20% owned three or more vehicles, and just fewer than 3% of surveyed respondents said that no one in their household owned a car, truck, or motorcycle.

Table 4.1.3: Household Vehicles Owned

Number of Vehicles	Percent
0	2.8%
1	28.9%
2	46.3%
3	15.9%
4	3.7%
5 or more	2.4%

Resident Parking Behavior and Experiences

The survey questioned downtown residents on their at-home parking behavior and asked where they and their visitors typically parked. At their residence, 88% of all respondents stated that typically they parked at least one car in their garage or driveway. If the household owned a second car, 40% park on the street and 60% park that vehicle in the garage or driveway. Finally, for households' third, fourth and fifth vehicles, 65% were typically parked on the street and 35% were typically parked in garages or driveways.

Table 4.1.5: Parking Location by Number of Vehicles

Number of Vehicles	Off-street (driveway, garage, etc)	On-street
First vehicle	88%	12%
Second vehicle	60%	40%
Third, fourth and fifth vehicle	35%	65%

Table 4.1.5 thus suggests that the large majority of vehicles owned by residential households are not dependent on on-street parking. As vehicle ownership increases, however, so does a household’s dependency on on-street parking to accommodate their parking needs.

In contrast, 90% of survey respondents stated that when guests visit they park on the street. This result suggests that residents in the downtown area are almost entirely reliant on public, on-street parking to accommodate their visitors.

Table 4.1.6: Visitor Parking Location

Parking Locations	Percent
On the street	90%
In your home's private, enclosed garage (not shared with neighbors or other tenants)	0%
In an assigned parking space or designated guest parking in a shared garage or parking area	6%
In your home's private driveway (not shared with neighbors or other tenants)	2%
In another off-street parking area (please describe)	2%

Questions were also asked regarding residents' experiences with parking occupancy and difficulty in finding parking. When asked how often they observed parking on the street to be full or nearly full, 46% responded "always or often", 25% responded "occasionally", and 28% responded "seldom or never".

Table 4.1.7: Observed Parking Occupancy

Full or Nearly Full Parking Occupancy	Overall	Area A Only	Area B Only	Area C Only	Area D Only	Area G Only
Always or Often	46.7%	28.6%	54.5%	65.0%	83.6%	11.5%
Occasionally	24.6%	42.9%	36.4%	30.0%	9.8%	31.1%
Seldom or Never	27.9%	28.6%	9.1%	5.0%	4.9%	55.7%
Not sure/ No opinion	0.8%	0.0%	0.0%	0.0%	1.6%	1.6%

As Table 4.1.7 indicates, however, disaggregating these responses by area shows a wide variation between different parts of the downtown. In Area D, for example, nearly 84% of respondents described parking as always or often "full or nearly full." This concern with parking occupancy levels near the Caltrain/JPB station mirrors patterns seen in the Task 1 parking utilization data and comments received at public meetings.

When asked about how difficult it was to find parking, 16% of all respondents indicated that they "always or often" have difficulty finding on-street parking, while 22% indicated that their guests have difficulty finding on-street parking. Again, however, responses differed depending on where in downtown the respondent lived. Residents in Area C, in the commercial core of the downtown, reported the greatest difficulty finding parking for themselves, with residents in Area D also reporting a high rate of difficulty finding parking.

Table 4.1.8: Difficulty Finding Parking

	Always or Often	Occasionally	Seldom or never	Do not typically use on-street parking	Not sure/No opinion
Survey Respondent					
Overall	16%	26%	31%	25%	1%
Area A Only	0.0%	33.3%	33.3%	33.3%	0.0%

Area B Only	27.3%	9.1%	45.5%	18.2%	0.0%
Area C Only	40.0%	25.0%	5.0%	30.0%	0.0%
Area D Only	32.8%	25.9%	12.1%	25.9%	3.4%
Area G Only	3.4%	25.4%	50.8%	20.3%	0.0%
Visitors/Guests					
Overall	22%	37%	37%	2%	3%
Area A Only	33.3%	16.7%	16.7%	0.0%	33.3%
Area B Only	27.3%	27.3%	45.5%	0.0%	0.0%
Area C Only	31.6%	31.6%	31.6%	5.3%	0.0%
Area D Only	42.1%	38.6%	10.5%	3.5%	5.3%
Area G Only	3.6%	39.3%	53.6%	1.8%	1.8%

In general, respondents were more likely to report that their guests had difficulty finding parking, likely because guests were noted to be much more reliant on street parking.

Resident Parking Satisfaction

The survey also asked downtown area residents if they were satisfied with the availability of on-street parking near their residence. Overall, 51% of respondents were very satisfied or satisfied with parking near their residence, 18% were neutral, 30% were dissatisfied or very dissatisfied, and 1% had no opinion.

Table 4.1.9: Resident Satisfaction with Parking Availability

Satisfaction	Overall	Area A Only	Area B Only	Area C Only	Area D Only	Area G Only
Very satisfied/ satisfied	51%	57.1%	45.5%	45%	23%	66.6%
Neutral	18%	14.3%	9.1%	10%	18%	21.7%
Dissatisfied/ very dissatisfied	30%	28.6%	45.5%	45%	57.4%	11.6%
No Opinion	1%	0%	0%	0%	1.6%	0%

On an area by area basis, however, respondents in the commercial core (Areas B and C) had a slightly less favorable view of parking availability and respondents living near the Caltrain/JPB station (Area D) were much less satisfied with the availability of parking.

Table 4.1.10: Resident Satisfaction with Parking Restrictions

Satisfaction	Overall	Area A Only	Area B Only	Area C Only	Area D Only	Area G Only
Very satisfied/ satisfied	50%	57.2%	36.4%	20%	18.1%	42.8%
Neutral	18%	42.9%	18.2%	25%	16.4%	17.0%
Dissatisfied/ very dissatisfied	31%	0%	45.5%	55%	64%	39.0%
No Opinion	1%	0%	0%	0%	1.6%	1.3%

Residents were also asked about their level of satisfaction with on-street parking restrictions near their homes. Overall levels of satisfaction were nearly identical to satisfaction levels expressed with parking availability. On an area by area basis many of the respondents living in the more commercial and heavily restricted areas of the downtown (Areas B and C) or in the neighborhood adjacent to the VTA / Caltrain station (Area D) were far less satisfied with parking restrictions. 45.5%, 55%, and 64% of

respondents in areas B, C, and D respectively described themselves as dissatisfied or very dissatisfied with the current system of time restrictions.

The high levels of dissatisfaction with parking availability and restrictions observed in the residential areas immediately around the downtown and Caltrain station are not unexpected. These areas are more likely to experience parking pressures from commuters, downtown shoppers, and employees. Similarly, Mountain View's current system of time restrictions may serve to limit spillover parking on some streets but can also limit the extent to which residents can use street parking. Residential permit parking programs are one example of a parking management strategy that could address some of these concerns and are discussed in detail later in this report.

Resident Parking Priorities

The survey also questioned resident respondents on their parking priorities and opinions regarding residential permits. To elicit a set of priorities related to on-street parking, respondents were asked to rank the following three priorities in order of importance:

1. I always want to be able to find street parking in front of or immediately adjacent to my home
2. I want parking on my street to be totally unrestricted
3. I want parking on my street to be prioritized for residents and their visitors

The highest ranked priorities included the desire to find parking immediately (#1) and the desire for parking to be prioritized for residents and visitors (#3). The lowest ranked priority was the want for on-street parking to be totally unrestricted (#2).

When asked about their feelings related to a hypothetical residential parking permit program, overall 37% of respondents felt very positive or positive about the idea, 18.5% felt neutral, and 44.5% felt negative or very negative. Respondents were also asked how they would feel about paying three different increments for a residential parking permit: $50, $100, and $150. While 25% felt very positive or positive about paying $50, only 11% and 9% felt very positive or positive about paying $100 or $150, respectively.

Again, however, responses to the idea of a residential permit program varied by respondent location. While 37% of all respondents felt very positive or positive about a permit program, a full 70% of respondents in Area C felt positive or very positive and 59% of respondents in Area D near the Caltrain/JPB station felt positive or very positive.

Downtown Business Owners and Managers

The following is a brief summary of survey responses received from downtown business owners and managers. Due to the small number of total responses received (31) a relatively simple analysis is presented. Detailed responses to all questions are included in the Appendix.

Business Characteristics

Downtown business owners and managers were asked several questions about the characteristics of their business, number of employees, and peak hours of activity. The business category of respondents included eating establishments (13%), retail businesses (33%), and office/professional businesses (50%). When asked about the length of employee shifts 13% of respondents said their employees worked five hours or less, 67% worked between five and eight hours, and 20% worked more than eight hours.

Table 4.1.11: Type of Business

Business Category	Percent
Eating Establishment	13.3%
Retail Business	33.3%
Office or Other Professional Services	50%
Personal Services	0%
Other	3.3%

Table 4.1.12: Length of Employee Shifts

Shifts	Percent
5 hours or less	13%
5-8 hours	67%
Over 8 hours	20%

Business Owner Parking Behavior and Experiences

Parking behavior and experience questions related to the types of parking available to employees and visitors, where employees parked, if employees "re-parked" during the workday, and the usage of commercial parking permits were asked. At their place of business, 67% of respondents indicated that they did not have off-street parking, and 33% indicated they did. Of those that had private off-street parking, 10% used it for customers and clients only, 40% used if for employees only, and 50% used it for both customers and employees.

Table 4.1.13: Off-street (private) Parking Available

Private Parking Available	Response Percent
No	67%
Yes	33%

Table 4.1.14: Off-street Parking Usage

Parking Usage	Response Percent
Customers and clients only	10.0%
Employees only	40.0%
Both customers and employees	50.0%

When asked about where employees of the business typically parked, 30% of respondents indicated they parked in the private off-street parking lot of the business, 67% parked in public parking lots or structures, 20% parked on-street in the core downtown area, and 7% parked on-street in the residential neighborhoods. When asked if their employees re-parked or move their cars to avoid parking time limits, 43% of respondents indicated that they had observed this behavior, 43% had not observed this behavior, and 14% were unsure.

Table 4.1.15: Employee Parking Locations

Locations	Response Percent
In your business' own private parking	30.0%
In public parking lots or structures	66.7%

On-street, in the immediate downtown area	20.0%
On-street, in the residential neighborhoods	6.7%
Don't know/Not sure	0.0%

Table 4.1.16: Perception of Employee Re-parking

Perception/Observation	Response Percent
No	43.3%
Yes	43.3%
Don't know/ Not Sure	13.3%

Regarding the parking behaviors of customers and clients, 7% of respondents indicated that they believed their customers parked in the off-street lot of the business, 70% thought they parked in public parking lots or structures, 47% believed they parked on-street in the core downtown area, and 7% believed they parked on-street in the residential neighborhoods (respondents could select multiple options for this question).

Business Owner Parking Satisfaction

The survey also included questions intended to gauge business owners and managers' perceptions of customer and client satisfaction with parking. The most frequent complaints pertained to the difficulty finding a parking space (30%) and restrictive time limits (30%). Most respondents (96%) indicated that they had only seldom or occasionally received complaints regarding tickets or parking enforcement. Similarly, most respondents (90%) indicated they had only seldom or occasionally received complaints about a lack of bicycle parking.

Business owner survey respondents were then asked to consider both their personal experiences and what they had heard from employees and customers and then to rate their level of satisfaction with the following five categories of parking in downtown:

- Ease of finding a parking space
- The amount of time allowed for parking/current time restrictions
- Level of parking enforcement
- Your customers' parking experience
- Your employees' parking experience

The level of satisfaction and dissatisfaction was mostly split for each category—with slightly more respondents typically satisfied. The level of satisfaction regarding time restrictions was the only category where more respondents (57%) were dissatisfied.

Table 4.1.17: Level of Satisfaction with Different Parking Issues

Opinion	very satisfied/ satisfied	Dissatisfied/ very dissatisfied	no opinion
Ease of finding a parking space	57%	43%	0%
The amount of time allowed for parking/current time restrictions	43%	57%	0%
Level of parking enforcement	59%	34%	7%
Your customers' parking experience	57%	33%	10%
Your employees' parking experience	53%	37%	10%

Business Owner Parking Priorities

Respondents were asked about their parking priorities and their opinions regarding parking meters. To elicit a set of priorities related to parking, respondents were asked to rank the following five priorities in order of importance:

1. I want customers to be able to find parking quickly as close to my business as possible
2. I want parking downtown to remain free
3. I want long term/all day parking options for downtown employees
4. I want extended time restrictions so that customers can park for more time
5. I want my employees to be able to park close to my business

The two highest ranked priorities included the want for parking to remain free (#2) and for customers to quickly find parking (#1).

Business owners were also asked a series of questions regarding their response to hypothetical proposals to extend the enforcement hours of current time restrictions to 8:00 p.m. and to install on-street parking meters to charge for parking along and around Castro Street. Business owner opinion was generally negative towards both hypothetical policies. With respect to the proposal to extend restriction hours, only 10% were felt positive or very positive, 33.3% were neutral, and 56.7% felt negative or very negative. When asked about metering along and around Castro Street, 6.6% felt positive or very positive while 20% felt neutral and 73.3% felt negative. Subsequent questions explaining some of the potential benefits of a metering program shifted business owner opinion slightly but overall sentiment towards metering was still highly negative.

4.2. Intercept Survey

The second survey conducted as part of the Downtown Mountain View Parking Study was an in-person intercept survey intended to capture the parking habits and attitudes of a cross section of visitors to the downtown. While the on-line survey was targeted towards specific downtown stakeholders, this survey was intended to include a sample of all downtown users during the downtown's busiest periods of activity. This summary provides a detailed look at some of the key differences between how different people use parking depending on their trip purpose or the time of day they visited the downtown. A presentation of intercept survey responses is located in the Appendix.

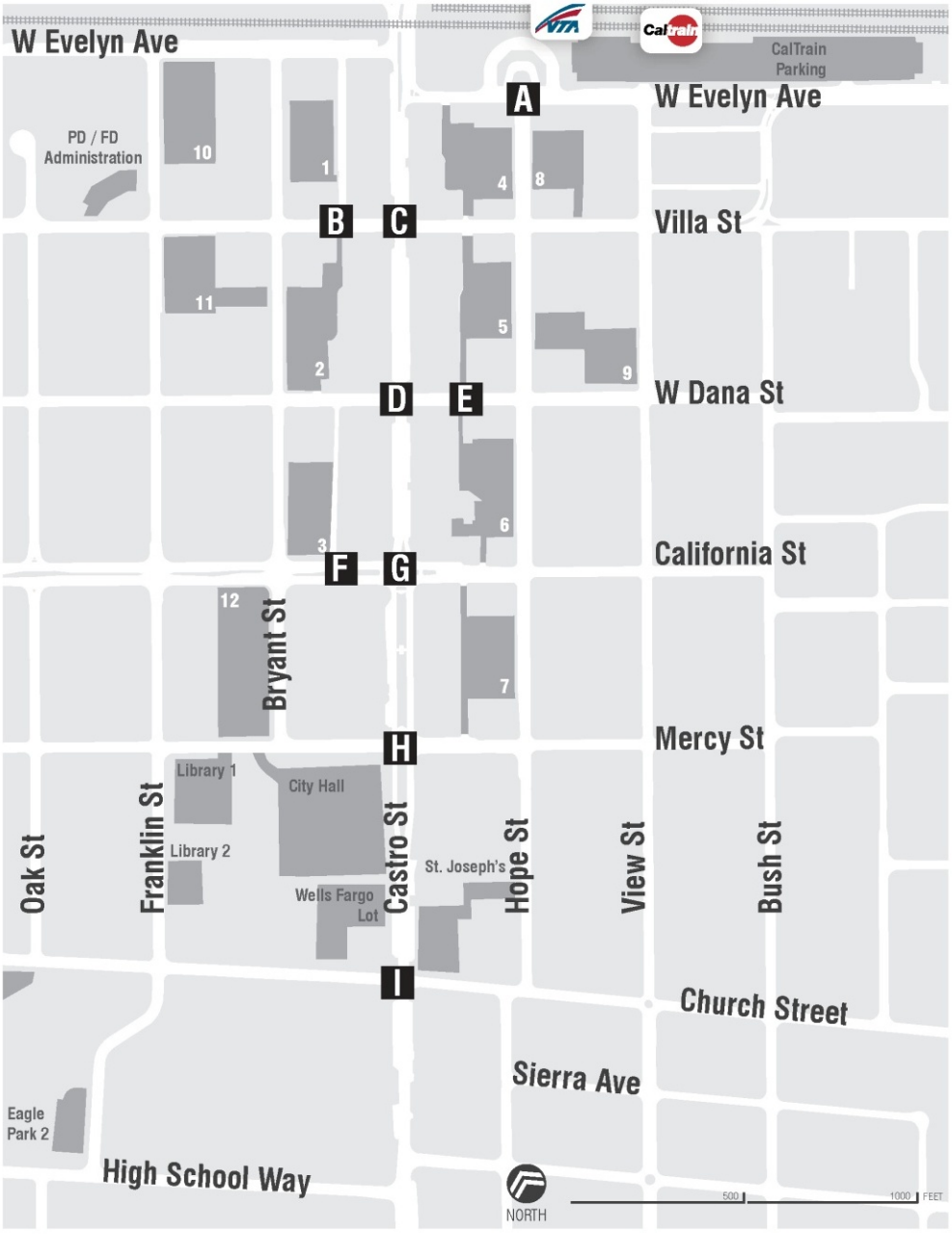
Survey Methodology

Intercept survey methodology was relatively simple. Surveyors approached pedestrians in the downtown and asked them a set of questions about their experiences parking in the downtown, their level of satisfaction, and their opinions and priorities. The survey occurred over the following two, four-hour time periods:

- Thursday midday, November 18, 2010 from 11:00 a.m. to 3:00 p.m.
- Friday evening, November 19, 2010 from 6:00 p.m. to 10:00 p.m.

A total of 248 responses—145 on Thursday and 103 on Friday—were collected. Of this total 192 respondents indicated that they drove and parked in downtown and were thus given the entire survey. Surveyors administered the survey in the core downtown area, rotating between the areas shown in Figure 4.2.1 on the following page.

Figure 4.2.1: Intercept Survey Locations



Off-Street Parking Lot

Survey Locations

A. Hope Street at W Evelyn Ave
B. Villa Street, mid-block between Bryant Street and Castro Streets
C. Castro Street and Villa Street
D. Castro Street and Dana Street
E. West Dana Street, mid-block between Hope and Castro Streets
F. California Street, mid-block between Bryant and Castro Streets
G. Castro Street and California Street
H. Castro Street and Mercy Street
I. Castro Street and Church Street

Parking Characteristics

Initial survey questions asked in the intercept survey related to details such as the respondent's trip purpose, length of stay, and mode used to get downtown. Survey respondents' trip purpose varied widely, with 51% going out to eat, 20% going to work, 12% downtown to go shopping, and 17% indicating "other" (see Table 4.2.1). 14% of respondents planned to spend 30 minutes or less downtown, 12% planned to spend 30 minutes to an hour, 42% planned to spend between one and two hours, 15% planned to spend between two and four hours, 7% planned to spend between four and eight hours, and 11% planned to spend eight or more hours. When broken down by trip purpose, 73% of workers planned to spend 4 or more hours, 81% of diners planned to spend between one and four hours, and 94% of shoppers planned to spend less than two hours (see Table 4.2.2).

Table 4.2.1: Trip Purpose

Trip Purpose	Midday Responses		Evening Responses		All Responses	
	%	#	%	#	%	#
Working	30%	43	6%	6	20%	49
Shopping	12%	18	12%	12	12%	30
Eating	37%	54	71%	73	51%	127
Other	21%	30	12%	12	17%	42
Total who answered question	**145**		**103**		**248**	

Table 4.2.2: Length of Time by Trip Purpose

Length of Time	Working	Eating	Shopping	Other	Total
30 or less	10%	9%	27%	23%	14%
30 minutes - 1 hour	0%	9%	30%	23%	12%
1-2 hours	4%	61%	37%	33%	42%
2-4 hours	12%	20%	3%	8%	15%
4-8 hours	24%	1%	0%	8%	7%
8 or more hours	49%	0%	3%	8%	11%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**49**	**127**	**30**	**40**	**246**

To get downtown 77% of respondents drove, 3% biked, 7% walked, and 5% took public transit. A higher percentage of respondents used non-automobile modes during the Thursday midday time period compared to the Friday evening time period. One reason for this difference may be that there was intermittent rain during the Friday survey time period. When broken down by trip purpose, shoppers were more likely to walk compared with the other groups and workers were more likely to bike compared with the other groups (see Table 4.2.3). At this point in the survey, respondents who did not drive downtown were thanked for their participation in the study and were not asked further questions.

Table 4.2.3: Mode by Trip Purpose

Mode	Working	Eating	Shopping	Other	Total
Drove	78%	87%	77%	50%	77%
Biked	4%	1%	0%	5%	2%
Walked	12%	7%	20%	33%	14%
Public	6%	4%	3%	10%	5%
Other	0%	2%	0%	2%	1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**49**	**127**	**30**	**42**	**248**

Parking Behavior and Experiences

Parking behavior and experience questions related to where respondents parked, how long they searched for parking, and how far from their destination they parked. These questions were asked only of respondents who stated that they had driven to downtown.

Survey respondents going to work typically did not use on-street parking, but instead parked in private parking lots (35%) and public parking structures (35%). Shoppers mostly utilized on-street parking (65%), while diners utilized a mixture of public parking lots (32%), public parking structures (36%) and on-street parking (32%) fairly equally. Neither shoppers nor diners utilized private parking lots.

Table4.2.4: Location Parked by Trip Purpose

Location	Working	Eating	Shopping	Other	Total
Public Parking Lot	22%	32%	17%	19%	27%
Public Parking Structure	35%	36%	17%	10%	31%
On-street	8%	32%	65%	67%	35%
Private Parking Lot	35%	0%	0%	5%	7%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**37**	**110**	**23**	**21**	**191**

When asked about searching for parking, 44% of survey respondents stated that they had spent less than two minutes searching for parking, 35% said they had spent between two and five minutes, 18% said they spent between five and 10 minutes and 4% spent more than 10 minutes.

When separated by trip purpose, workers tended to find parking the fastest with 71% of respondents finding a spot in less than two minutes. People going out to eat took longer to find parking with 80% of respondents finding a spot within five minutes. Taking the longest, 52% of shoppers took between five and 10 minutes to find parking (see Table 4.2.5).

Table 4.2.5: Time Spent Searching for Parking by Trip Purpose

Search Time	Working	Eating	Shopping	Other	Total
Less than 2 minutes	71%	36%	26%	52%	44%
2-5 minutes	13%	44%	22%	38%	34%
5-10 minutes	11%	15%	52%	10%	18%
10 or more minutes	5%	5%	0%	0%	4%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**38**	**110**	**23**	**21**	**192**

It is also interesting to compare the amount of time people spent searching for parking with the length of time they said they intended to stay downtown. When separated by the length of visit to downtown, people staying longer tended to find parking more quickly. For people visiting downtown for less than 30 minutes, 20% indicated they spent more than five minutes looking for parking. It is understandable that long term parkers (likely employees) would be knowledgeable about where to find parking and would thus be able to minimize their search times. It is more concerning, however, that a sizeable group of short-term visitors were reporting spending 5-10 minutes looking for parking since this search time constitutes a substantial percentage of their total time spent downtown.

Table 4.2.6: Time Spent Searching for Parking by Trip Purpose

Search Time	Visit 30 Minutes or Less	Visit 30 Minutes - 1 Hour	Visit 1-2 Hours	Visit 2-4 Hours	Visit 4-8 Hours	Visit 8 or More Hours	Total
Less than 2 minutes	81%	42%	26%	32%	64%	89%	44%
2-5 minutes	0%	47%	46%	43%	27%	6%	34%
5-10 minutes	12%	11%	26%	18%	9%	6%	18%
10 or more minutes	8%	0%	3%	7%	0%	0%	4%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**26**	**19**	**90**	**28**	**11**	**18**	**192**

With respect to the distance parked from their destination, 53% of respondents stated that they parked within one block, 41% parked between two and three blocks, and 6% parked four or more blocks away. When separated by trip purpose, workers tended to park closer with 78% parking within one block of their destination. Diners and shoppers parked slightly further from their destinations, but most still parked within three blocks.

Table 4.2.7: Distance Parked from Destination by Trip Purpose

Distance	Working	Eating	Shopping	Other	Total
1 block	78%	44%	52%	62%	53%
2-3 blocks	19%	50%	39%	38%	41%
4 or more blocks	3%	6%	9%	0%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**37**	**110**	**23**	**21**	**191**

Parking Satisfaction

The intercept survey also asked questions related to respondents' satisfaction with time restrictions and availability of parking in downtown. These questions were only asked of respondents who drove to downtown for their visit.

When questioned about their satisfaction with parking time restrictions, 66% of respondents were very satisfied or satisfied, 11% were neutral, 18% were dissatisfied or very dissatisfied, and 5% had no opinion. Separated by trip purpose, workers and diners tended to be more satisfied compared to shoppers.

Table 4.2.8: Time Restriction Satisfaction by Trip Purpose

Satisfaction	Working	Eating	Shopping	Other	Total
Very satisfied	43%	23%	23%	57%	31%
Somewhat satisfied	38%	35%	27%	38%	35%
Neutral	5%	13%	18%	5%	11%
Somewhat dissatisfied	0%	16%	32%	0%	13%
Very dissatisfied	14%	4%	0%	0%	5%
No opinion	0%	9%	0%	0%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**37**	**110**	**22**	**21**	**190**

When questioned about their satisfaction with the availability of parking, 72% of respondents were very satisfied or satisfied, 10% were neutral, and 18% were dissatisfied or very dissatisfied. Separated by trip purpose, shoppers tended to be more dissatisfied with 27% being somewhat dissatisfied or very dissatisfied.

Table 4.2.9: Parking Availability Satisfaction by Trip Purpose

Satisfaction	Working	Eating	Shopping	Other	Total
Very satisfied	35%	25%	23%	62%	31%
Somewhat satisfied	41%	45%	41%	24%	41%
Neutral	5%	14%	9%	5%	11%
Somewhat dissatisfied	14%	14%	18%	5%	13%
Not satisfied	5%	4%	9%	5%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**37**	**110**	**22**	**21**	**190**

Parking Priorities

Finally, the intercept survey questioned respondents on their parking priorities in downtown and their opinions regarding paying for parking. These questions were only asked of respondents who drove to downtown for their visit.

Respondents were asked to consider the following priorities and choose the one that was most important to them:

- Being able to park for as long as I need
- Quickly finding a parking space near my destination
- Being able to park for free

- Having clear directions showing me where I can find parking

Overall, finding a parking space close to one's destination was ranked as the highest priority with being able to park for free a close second. Separated by trip purpose, workers tended to consider being able to park for extended periods as important while shoppers did not. On the other hand shoppers placed a higher level of importance on being able to quickly find a spot near their destination.

Table 4.2.10: Most Important Parking Priority by Trip Purpose

Row Labels	Working	Eating	Shopping	Other	Total
Being able to park for as long as I need	30%	18%	5%	24%	19%
Quickly finding a parking space near my destination	19%	39%	45%	48%	37%
Being able to park for free	43%	33%	41%	29%	35%
Having clear directions showing me where I can find parking	5%	9%	9%	0%	7%
Other	3%	1%	0%	0%	1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**37**	**110**	**22**	**21**	**190**

When comparing midday and evening responses, evening respondents tended not to consider time restrictions as important, most likely because such restrictions were not in effect in the evening. However, finding parking quickly near their destination was of greater importance to evening respondents.

Table 4.2.11: Most Important Parking Priority

	Midday Responses		Evening Responses		All Responses	
Most Important	%	#	%	#	%	#
Being able to park for as long as I need	23%	23	16%	14	19%	37
Quickly finding a parking space near my destination	30%	30	44%	40	37%	70
Being able to park for free	38%	38	32%	29	35%	67
Having clear directions showing me where I can find parking	8%	8	7%	6	7%	14
Other	1%	1	1%	1	1%	2
Total who answered question	**100**		**90**		**190**	

When asked if they would be willing to pay a small amount for parking if it meant being able to more easily and consistently find parking nearby, 34% of respondents said yes, 60% said no, and 5% had no opinion. Separated by trip purpose, diners were slightly more willing to pay compared to shoppers and workers.

Table 4.2.12: Pay for More Convenience by Trip Purpose

Opinion	Working	Eating	Shopping	Other	Total
Yes	27%	37%	29%	40%	34%
No	65%	58%	71%	50%	60%
No Opinion	8%	5%	0%	10%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**37**	**108**	**21**	**20**	**186**

When asked if they would be willing to pay a small amount for parking if it meant being able to park for longer than current time restrictions allowed, 39% of respondents said yes, 56% said no, and 5% had no opinion. Separated by trip purpose workers tended to be more supportive of paying if it meant being able to park for longer. Compared to their response to the previous question regarding paying for more convenience, the percent of workers in support of paid parking increased from 27% to 43%.

Table 4.2.13: Pay for Longer Time by Trip Purpose

Opinion	Working	Eating	Shopping	Other	Total
Yes	43%	38%	33%	43%	39%
No	54%	56%	67%	52%	56%
No opinion	3%	6%	0%	5%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Count Total	**37**	**109**	**21**	**21**	**188**

Task 5: Parking Management Case Studies

The following document is a full reporting of the case studies analysis conducted during Task 5 of the Downtown Mountain View Parking Study. The parking management strategy work conducted as part of Task 5 is presented in the summary recommendations at the beginning of this report.

Task 5.1 includes detailed case study discussions encompassing the formation, outreach, implementation, administration and financial aspects of parking management experiences of six California cities (5 from the Bay Area and 1 from Southern California). Task 5.2 provides a detailed discussion of unbundling parking as a potential parking management tool, as requested by City staff.

The following is a very brief summary of key findings included in the report:

Task 5.1- Parking Case Studies

Case studies were developed for the six cities listed below for the purpose of understanding the process, elements and results of existing parking management programs. The case studies describe the political and economic environment of the planning process for how the cities used parking management to revitalize their downtowns. The range of communities represented offer valuable solutions and lessons learned particularly regarding the need for a comprehensive management approach, the value of stakeholder participation, the importance of collecting good data and finally, the willingness to make adjustments over time.

Redwood City	RWC has long been considered a pioneer in parking pricing. RWC's value pricing program was developed and rolled out over 2006-2007 with the goal to revitalize its downtown. The case study provides detailed information about the outreach and education process as well as how the program (pricing levels) has had to be adjusted over time.
Ventura	The City of Ventura adopted a parking management program as part of the larger revitalization process taking place in the downtown. Ventura's plan was developed in 2007 and implemented in 2009-2010. The case study provides detailed information about outreach and policy development and implementation details including how parking behaviors have changed in response to pricing.
San Mateo	The City of San Mateo has been managing parking in their downtown for many years and has recently (July 2010) made some policy and program changes in order to improve access and turnover within their current facilities. This has included differential pricing and time limits for off-street facilities and the exploration of a parking based business improvement district
Burlingame	The City of Burlingame instituted differential pricing to encourage turnover on their high value street meters, shifting price sensitive long term parkers to cheaper satellite off-street lots. This program was supplemented with a parking wayfinding system.
Palo Alto	The City of Palo Alto chose to manage its parking with a unique color coded zone approach. Visitors can park for up to 2 hours in any one color zone for free. Visitor and long term permits are also sold for these areas. The City has noted that this method required significant enforcement resources. Businesses are part of an assessment district which helps cover the cost.

San Jose — The City of San Jose's Residential Permit Parking (RPP) program and Parking Guidance Systems (PGS) were evaluated for this case study. In 2000, there were parking issues in the downtown area due to revitalization, redevelopment and San Jose State University (SJSU) enrollment. To improve the parking supply/demand balance in Downtown, the City adopted residential parking permit zones in several areas. The PGS was rolled out in 2004 to assist in wayfinding to existing off-street parking facilities.

Task 5.2- Unbundling Parking

Residential and commercial parking requirements are often perceived as tying developers' hands from building to the true market demand for parking by requiring parking supply that the market may not desire. There are some code tools that provide flexibility in this arena. These include requirement reductions due to proximity to transit, and participation in TDM programs as well as inclusionary (affordable) housing. Unbundling the cost of parking spaces from leasable units is also a tool that helps to gauge market demand and control the costs of commercial and residential development. It is also a management tool that provides greater transparency about the true costs of parking, so residents (and employees) can make fully informed choices.

5.1 Parking Management Case Studies

Case studies were developed for the six cities listed below for the purpose of understanding the process, elements and results of existing parking management programs. The case studies describe the political and economic environment of the planning process for how the cities used parking management to revitalize their downtowns. The range of communities represented offer valuable solutions and lessons learned particularly regarding the need for a comprehensive management approach, the value of stakeholder participation, the importance of collecting good data and finally, the willingness to make adjustments over time.

Redwood City

Background

Redwood City is a San Francisco peninsula city that implemented several parking reforms as a key component to successfully revitalizing their downtown. Parking requirements that were not conducive to infill development and a lack of funding for public parking lots and structures were two barriers that the City had to overcome in order to achieve the infill development that was necessary for their desired growth. Parking therefore became an integral part of the City's vision for downtown to be the entertainment capital of the Mid-peninsula.[13] The City adopted new zoning restrictions for off-street parking and a comprehensive downtown parking management plan. The stated parking management goal is to provide "just enough" parking and create a park-once and walk district.[14] To achieve this, the city implemented several measures:

1. The city adopted performance-based pricing for all curb meters. The council set an 85% occupancy goal and authorized staff to monitor occupancy and alter rates accordingly. Prices that produce an occupancy rate of about 85% can be called performance-based because when the price of parking fluctuates with demand, the resulting rapid parking turnover allows parking, transportation, and the economy to perform efficiently.
2. The city eliminated time limits at curb meters.
3. The city employed multi-space, user-friendly meters that opened up and beautified sidewalks
4. The city dedicated surplus revenue from the parking meters to the neighborhood for pedestrian improvements.

[13] California. Legislature. Senate. Transportation & Housing Committee. (2009). *Reducing congestion and greenhouse gas emissions through parking policy*. Sacramento, CA.: Senate Publications & Flags.

[14] Redwood City. (2007) Downtown Precise Plan

Formation of Parking Policy

The *Downtown Redwood City Parking Management Plan* was adopted in July 2005 as part of the larger revitalization process taking place in the downtown. Specifically, the reassessment and revision of the parking management plan occurred alongside the establishment of a multiplex cinema in downtown—a major component of the initial redevelopment strategy. Existing and future impacts of the cinema project on the Downtown parking system were assessed as part of the environmental impact report and provided invaluable information. The resulting parking plan, inspired by Donald Shoup and successful examples from Old Pasadena, proposed a new pricing scheme and the establishment of a parking meter benefit district.

The boundaries of the parking benefit district, also called the Downtown Core Meter Zone, were established from a parking occupancy study showing areas with sufficient parking demand to support meters. The revenues from the benefit district covers costs associated with both on-street and off-street parking facilities. This includes,

"all expenses of administration of the parking program, all expenses of installation, operation and control of parking equipment and facilities within or design to serve the Downtown Core Meter Zone, all expenses for control of traffic (including pedestrian and vehicle safety, comfort and convenience) which may affect or be affected by the parking of vehicles in the Downtown Core Meter Zone, including the enforcement of traffic regulations and other expenditures determined legal and appropriate."[15]

Outreach

One of the challenges was the process of convincing businesses owners and members of the public that the price increase was beneficial for the downtown. Many merchants were afraid that increased prices would hurt their businesses. The city responded by eradicating time limits and establishing a policy to dedicate all surplus parking revenue to increasing the cleanliness, safety, lighting, street furniture, and other amenities for Downtown. The lure of increased funds for downtown improvements, along with a series of interactive public workshops, built enthusiasm and support from merchants and other stakeholders throughout the process.

Redevelopment staff held three workshops with Downtown stakeholders to help them understand the challenges of managing parking, and also presented options for dealing with them. In the first workshop, the City presented the problem and asked the members of the public to draw their own conclusions about the appropriate solution. In the second workshop, the city presented the ideas of Shoup and parking best practices to discuss the advantages and disadvantages of each. At the third workshop, staff unveiled their recommendations for Downtown parking and explained in detail how each aspect would work and why it was chosen.[16] The city also held a workshop with the Downtown Business Group. The outreach process was successful because of the premise that awareness and understanding must exist before an attitude can be changed.

[15] Redwood City. (2005). Section 20.121. Use of Downtown Meter Zone Parking Meter Revenues
[16] Redwood City. (2005). The Downtown Redwood City Parking Management Plan

Ongoing advertising techniques such as stickers on meters and mailings are used to keep people informed about how their parking meter funds are being used and updates on changes to the pricing structure. The City is very interested in making the program as well-known and transparent as possible in order to encourage people to park in the less expensive areas.[17]

Implementation

The process from plan adoption to installation of the new multi-space meters took nearly two years. The policy was adopted in July 2005, took effect in May 2006, and the meters were installed in March 2007. During this time the City was working with parking meter vendors to design the pay stations and to buy and install the meters. However, the enthusiasm and support for the policy that was strong during the time of adoption faded over time and the City received some renewed resistance from business owners and the public during the time of installation due to the lag time between initial outreach efforts and actual implementation.

Setting Rates

As parking meters were already in place in downtown Redwood City, the political process was not concerned with the installation of meters, but with raising the rates to market pricing and charging different rates based on demand. The previous parking scheme for the downtown offered free parking along the main commercial street, while side streets and garages were priced at $.25 per hour. Nights and weekends were also free. Staff recognized that this system was not encouraging people to walk downtown because the farther people parked from the main street to walk in, the more they had to pay. This is opposite of sensible market pricing where higher prices are charged for areas with more demand.

The City changed the rates so that the new pricing scheme charged $.75 per hour on Broadway (the main street), $.50 per hour on side streets and other parking at $.25 per hour. [18] These areas would be enforced Monday through Saturday, 10:00 a.m. to 10:00 p.m. The rates were established as a starting point until the effects of the new cinema and downtown businesses could be fully felt. In order to spur development and encourage people to visit downtown, the City cut back on both rates and enforcement times.[19] Currently the rates have been lowered to $.50 per hour on Broadway, enforced Monday through Saturday, 10:00 a.m. to 6:00 p.m. and $.25 per hour on side streets, enforced Monday through Friday 10:00 a.m. to 6:00 p.m. (See Figure 5.1.1).

[17] Avery, Emily (June 2007). A Contextual Analysis of the Use of Parking Benefit Districts as a Revitalization Tool. (Unpublished thesis)
[18] Redwood City. (2010). http://www.redwoodcity.org/bit/transportation/parking/Overview.html
[19] Hammack, C. (2011, January 28). Telephone interview

Figure 5.1.1: Redwood City Downtown Parking Map

Source: City of Redwood City

Administration

Currently an interdepartmental group, the parking team, meets bi-monthly to discuss issues. There are many departments involved besides the Building, Infrastructure, and Transportation Department. The engineering staff in the Building, Infrastructure, and Transportation Department is responsible for recommending changes to the meter rates. The City Manager has the authority to survey average occupancy on a quarterly basis and to adjust the rates up or down in $0.25 intervals to achieve the target occupancy rate of 85%. If hourly rates must exceed $1.50, the express approval of the City Council is needed. The responsibilities for cleaning, graffiti removal, and maintenance are shared between the Public Works Department, Building Infrastructure and Transportation Department, and a private contractor. The City anticipates that once there is surplus revenue from the program, a Parking Fund Advisory Committee, comprised of downtown merchants, will be established to participate in the budgeting of the meter revenues.

Financing

Major Initial Expenditures

All surplus revenue which had accumulated previously was dedicated to the purchase of the new meters and towards maintenance costs of the new garage beneath the cinema. The multi-space meters cost around $500,000 for the installation and Wi-Fi network of 42 meters. The meters, entrance and exit gates, installation, and DSL network of the gated parking system that went into the garages cost about $1,000,000.[20]

Revenues from Citations and Meters

Current revenues are not covering the costs of running the program. The decisions made earlier in the program to reduce price and enforcement hours, as well as the periods of free parking through the validation program, are partially responsible for this deficit. City staff are proposing changes to remedy this situation, which they are anticipating to bring before Council in February 2011.

Meter revenue, also called the Parking Fund, currently funds several positions in various departments—both fully and partially. This includes three FTE police officers, responsible for parking enforcement, and a private contractor who manages three gated parking facilities (2 garages and 1 surface lot). Other positions funded through the parking fund include supervisor and cash collection positions in Revenue Services; supervisor, manager, and meter technician in Public Works; and a management analyst in the Building, Infrastructure, and Transportation Department. There is also an IT position, which is funded through the General Fund.

Results

Although there were technical glitches in the beginning from faulty parts or loose connections from shipping, the meters are working well. Dan Zack, Downtown Development Coordinator, announced in 2009 that parking occupancy on Broadway decreased from 100% full to 82%. Average length of stay neared the desired one-hour mark. Monthly permit sales for city garages increased 50% as downtown employees moved off the streets and into the garages to park. Most important of all, Zack testifies that the desired growth came to the downtown.[21] Even complaints from the community, which were in full swing during the first year after implementation, have died down.[22]

[20] Hammack, C. (2011, February 02). Email correspondence
[21] Zack, Dan. (February 24, 2009). Testimonial in Reducing Congestion and Greenhouse Gas Emissions through parking policy. Sacramento, CA.: Senate Publications & Flags.
[22] Hammack, C. (2011, January 28). Telephone interview

Ventura

Background

Ventura is located between Malibu and Santa Barbara on the west coast, approximately 60 miles northwest of Los Angeles. The April 2010, California Department of Finance estimates the population at 109,946. Since 1995, the city had undergone major sidewalk improvements, gained a new cinema and many new restaurants and special events. In order to accommodate the increase of people visiting downtown and the higher demand for on-street parking, Ventura adopted a parking management program as part of the larger revitalization process taking place in the downtown.[23] The City adopted new zoning restrictions for off-street parking and a comprehensive downtown parking management plan. The plan, like Redwood City, is also centered on the park-once strategy, where a visitor can easily find parking upon arrival in Downtown and then shop, dine or be entertained without having to get back in the car. To achieve this, the city implemented several measures[24]:

- The City introduced paid curb parking with a policy goal of achieving an 85% occupancy rate and authorized staff to monitor occupancy and alter rates accordingly.
- The City eliminated time limits and all-day loading zones
- The City employed multi-space, user-friendly meters
- The City dedicated surplus revenue from the parking meters to the neighborhood.
- The City adopted a downtown parking permit program

Formation of Parking Policy

Over the past several years, the City, Downtown Ventura Organization (DVO), and Downtown Parking Advisory Committee have been working collaboratively to develop a parking management plan that will help make efficient use of current parking to better meet the needs of downtown residents, employees, shoppers and visitors. The Community Development Department, in partnership with Nelson/Nygaard, made 10 presentations to over 100 stakeholders and solicited feedback.[25] The recommendations were documented in the Downtown Ventura Mobility and Parking Plan, which were incorporated into the Downtown Parking Management Program. The Downtown Parking Management Plan was then adopted in March 2007 as part of the Downtown Specific Plan. The plan recommends a range of demand management techniques, including parking benefit districts, parking cash-out, and reduced parking requirements.

One of the challenges was the process of convincing businesses owners and members of the public that the switch from free to paid parking was critical to revitalizing the city's cultural and commercial core. The primary concern of the property owners was that businesses might lose customers due to lack of parking. At that time there was a perception among some members of the community that there was a

[23] City of Ventura. (2010). http://www.cityofventura.net/parking
[24] City of Ventura. (2007). Downtown Parking Management Program
[25] City of Ventura. (2006). Downtown Ventura Mobility and Parking Plan

problem with supply in downtown. In addition, as part of the revitalization of the downtown, the redevelopment agency was seeking to infill some private off-street lots without replacing the lost parking.[26]

The City responded to the concerns by moving away from pure demand-reduction pricing (as advocated by Shoup) and focusing instead on a parking benefit district and a new parking structure for downtown. Staff felt that this displayed the City's concern for providing adequate parking downtown and would hopefully generate more support for the Downtown Parking Management Program after the structure was built. [27] Like Redwood City, Ventura eradicated time limits and established a policy to dedicate all surplus parking revenue to amenities for Downtown. This was attractive to the DVO, whose mission is to tackle the issues of cleanliness and safety to foster a more vibrant downtown. Once a parking benefit district was established, the revenues from the benefit district would first be used to repay startup costs and then go to downtown improvements such as:

- Enhanced Police Services
- Increased Maintenance
- Landscaping
- Parking equipment
- Parking structures
- Pedestrian linkages
- Street furniture
- Street cleaning
- Transportation & parking planning
- Transportation & parking marketing and education programs
- Wayfinding system
- Universal Valet programs

The boundaries of the district were drawn (with stakeholder input and recommendations from the Downtown Ventura Mobility and Parking Plan) to be similar to the boundaries of the downtown parking enforcement area existing at the time.

Implementation

Ventura did not previously have any policies guiding on-street parking and had never had a parking management program. Parking meters were previously installed twice before and both times removed in the history of Ventura's downtown. At the time of implementation, the only paid parking in the City was in two paid structures at the beach. The utilization of on-street parking spaces in the downtown

[26] Avery, Emily (June 2007). A Contextual Analysis of the Use of Parking Benefit Districts as a Revitalization Tool. (Unpublished thesis)
[27] Avery, Emily (June 2007). A Contextual Analysis of the Use of Parking Benefit Districts as a Revitalization Tool. (Unpublished thesis)

core was over 90% most of the day, every day of the week; many of the spaces were being used by business owners and employees rather than by customers. [28]

The implementation plan for the downtown parking management program was organized into a series of four phases: actions for the year 2007 during the plan adoption process, short-term actions to be completed during 2008-2009, mid-term actions to be completed during 2008-2011, and long-term actions for 2011 and beyond. Below is a list of key actions proposed for the period between 2007 and 2011[29]:

- Concurrent (2007)
  - Hire new parking management staff
  - Parking supply and demand study
  - Plan for future parking supply and proceed with new parking structure where demand is anticipated to be greatest
- Short-term (2008-2009)
  - Implement new code and parking regulations: reduce minimum parking requirements, expand in-lieu parking fee program
- Mid-term (2008-2011)
  - Require unbundling of residential parking costs
  - Form a commercial parking benefit district
  - Implement a paid parking program
  - Establish a residential parking benefit district
  - Offer option for employees to cash-out of a parking space provided by the employer

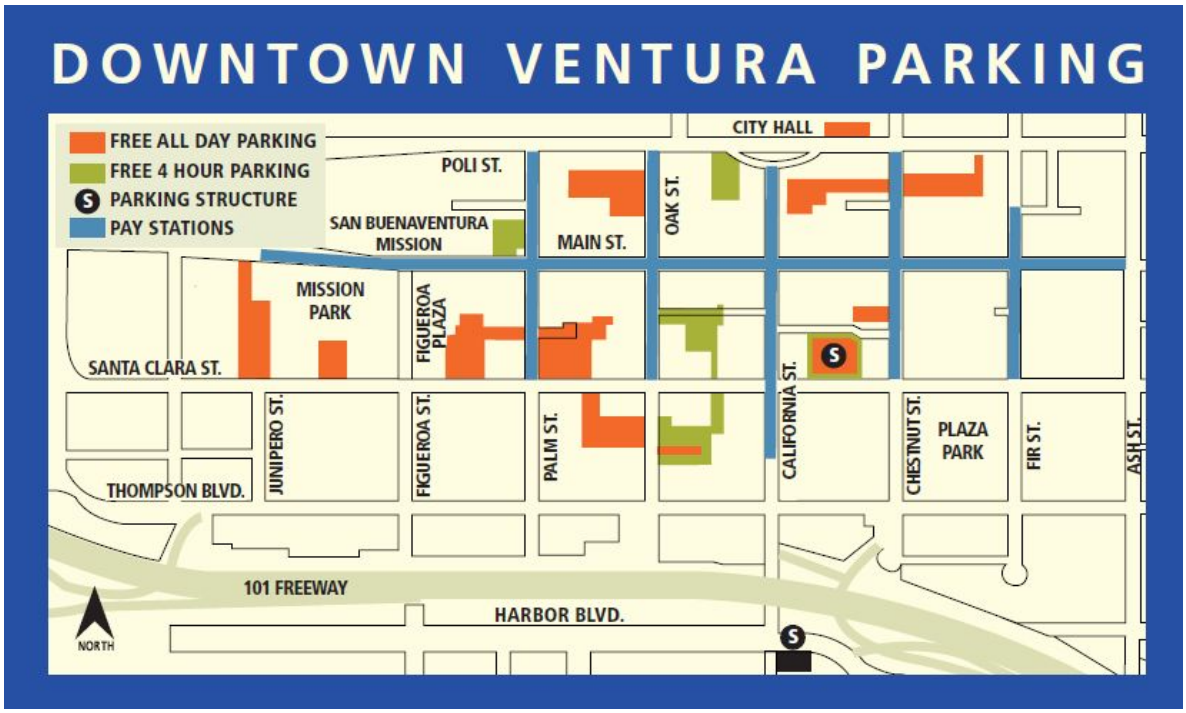
In 2010, the City installed 62 wireless, solar-powered parking pay stations in Downtown which covered about 400 of the 4,800 parking spaces downtown (See Figure 2). The process from plan adoption to installation of the new multi-space meters took nearly three and a half years. The policy was adopted in March 2007, and the meters were installed in September 2010. In the first year, the City met with the DVO every other week to craft the ordinance and detail implementation steps. During this time they conducted surveys of parking supply and occupancy and updated the City Council with their progress. The Transportation Manager, with consultant assistance, spent next 6 months visiting other cities with successful parking pricing in Colorado and the Bay Area to learn how they planned, implemented, and managed their program. The City of Glendale, in particular, was cited as a great resource because they had just installed exactly the same system, except the pay stations were not solar-powered.

In January 2009, the ordinance was adopted and the parking benefit district was created. During the same year, the City sent out a RFP and the resulting contract process took 5 months. They also revisited the budget and parking utilization numbers. In January 2010, the City signed the purchase agreement for the pay stations and the Wi-Fi network. Although the system was ready to "go live" in June, the City, in

[28] City of Ventura. (2010). http://www.cityofventura.net/parking
[29] City of Ventura. (2007). Downtown Parking Management Program

consideration of the economic climate, decided to wait until after summer. The meters were installed in August, and the system was turned on in September.[30]

Figure 5.1.2: Ventura Downtown Parking Map



Source: City of Ventura

Setting Rates and Signage

To calculate pricing rates, the City used a formula which included real costs from other cities and then calibrated the formula to Ventura's situation. The revenue is designed to cover the costs of the program. Initially, the rates were at $1.00 per hour for the first two hours, and $1.50 for each hour after, with no time restrictions. The meters were enforced Sunday through Thursday, 10:00 a.m. to 10:00 p.m. and Friday and Saturday from 10:00 a.m. to 12:00 midnight. However, people found the tiered system and varying enforcement hours to be confusing. In response, after the first three weeks of usage, the city eliminated the tiered rates to simply $1 per hour and changed the enforcement hours to 10:00 a.m. to 9:00 p.m. every day of the week.

"Park and Pay" signs were placed along the curb and at the pay stations to alert motorists of the new parking program; each parking space is numbered on the curb. New signs were placed to direct motorists to Free All Day and 4 Hour parking lots public parking lots located throughout downtown.

[30] Mericle,T. (2011, January 27). Telephone interview.

Outreach

According to the City, the greatest barrier to successful implementation for Ventura was communicating with the merchants and the general public. It was crucial for the City to have someone knowledgeable in marketing and public relations to create the desired and consistent message to get merchants on-board and carry them through the process. The carrier of the message was an organization that was already working with the business community, which helped communicate the Downtown Parking Management Plan. Another daunting task was getting the word out to as many members of the general public as possible.

Knowing the potential scale of community reaction to paid parking, Ventura gave people a way to let their opinions be heard. Most of the complaints came in through the online citizen complaint tracking system, and other complaints came by letters or emails to the City Council. The City Manager personally committed to respond to all comments within three days.

During the first week that the system was live, volunteer parking ambassadors walked around downtown to help people with using the pay stations. The City also sent paid staff members out to spend a few hours downtown to assist.

Although not necessarily pertaining to outreach, the City gained immediate credibility by implementing changes the morning after a final decision was made at a City Council meeting. Members of staff personally committed their own time to finishing changes before the start of normal business hours, so when business owners would open their shops in the morning, they would see the changes being done that were discussed in the previous night's meeting.

Project Management

In hindsight, the City wished that a cross departmental project team was established earlier in the process. Ventura formed their team a month before the system went live and realized the benefits of having such a team could have helped out much earlier in the process. Their team consisted of 12 to 13 individuals who were at a high enough level to commit resources quickly and efficiently. This included the city attorney, city manager, director of public works, assistant CFO, chamber of commerce executive director, community development director, assistant police chief, economic development and revitalization manager, and representatives from public affairs and IT. The team met weekly and up to twice a week during the first few weeks of implementation. These weekly meetings ensured a consistent level of information across all departments in terms of sharing issues, brainstorming solutions, and knowing which department was responsible for what action by what time.

Administration

The parking fund and parking benefit district were originally managed by the Redevelopment section of the Economic Development Department. The City Council gave the transportation manager the authority to adjust meter rates (within a certain range) accordingly to achieve an 85% occupancy rate without Council approval. The transportation manager is allowed to make adjustments twice a year, in $0.25 increments, and up to $0.50 per year. He/she may also decide what the meter revenue ultimately gets used for without Council approval, if the amount is under $125,000. The Parking Advisory Committee may also recommend projects which the Public Works staff builds into the capital or operating budget for City Council approval.

Financing

Major Initial Expenditures

To pay for the upfront capital and start up costs, the City managed to find a unique source of funding. A large residential and commercial development in the neighboring city of Oxnard paid $1.5 million to the City of Ventura in the form of traffic mitigation fees as part of a settlement agreement. The City borrowed $1.1 million from the traffic mitigation fund to pay for the purchase and installation of 65 pay stations ($744,000), the Motorola Wi-Fi system ($90,000), and staff time to get the program running ($300,000), among other expenses.

Revenues from Citations and Meters

Although the City has plans to secure citation revenue for the parking program, currently the citation revenue goes into the General Fund. Sufficient meter funds for public improvement projects will not be ready until after the program is more mature, which would be around 2012 or 2013. Currently, meter funds are used for small lighting or signage projects and to cover all enforcement costs. This consists of one FTE police officer who devotes 50% of his/her time to parking related activities and nine part-time police cadets paid at $15/hour. Meter funds are also used to cover one FTE engineering technician (which, in Ventura's case, is actually three engineers who devote 1/4 to 1/3 of their time to parking related activities), and one engineer supervisor who devotes 50% of his/her time to oversee parking related activities.

Enforcement

For 4 to 6 weeks after the meters were turned on, the City issued courtesy warnings instead of tickets. Over the Christmas holidays they used very light enforcement and even gave out 50,000 coupons for businesses to distribute to customers for free parking. After the holidays, the amount of enforcement reached a normal level at which it is being maintained today. Currently there is an average of 10-12 tickets given per day during the weekday and up to 25 tickets given per day on weekends. Most of the enforcement effort is concentrated on the main street. However, as the police cadets get more experienced and efficient, it is anticipated that they will start to cover the side streets as well.

Maintenance

The City passed on the responsibility of cleaning and graffiti removal to the DVO, along with a budget of $110,000 from the parking revenue. More serious issues such as coin jams, printer problems, or scratched screens are handled by the Public Works Department.

Results

The parking program yielded observable results immediately after implementation. Bill Fulton, the Mayor of Ventura, recorded in his blog that on the same morning that the paid parking portion of the

downtown management program had gone into effect, that the typically empty lots were mostly full and the typically occupied on-street parking spaces were vacant. The people who usually park all day downtown had moved into the lots and the upper levels of the parking garage and so the spaces on the street were available for those running short-term errands. In other words, only 30 minutes after they instituted the parking management program it was working.[31]

However, the City is planning to wait 6 months for the program to mature before studying actual parking occupancy. Because Ventura is a beachside city, waiting until after summer to gather data will show how the pricing system handles the seasonal parking demands. From the meter data on the main street, they can estimate that occupancies (which used to be 90-95% during peak hours) are now around 75-80%. They observed a drop in occupancy between the hours of 2:00 p.m.-5:00 p.m., which they believe is the result of employees (who used to park on the main street) now parking further away— but there is no immediate way of verifying if this is true.[32]

Anecdotal evidence from conversations with jewelry store, restaurant, and bar owners, reveal that their customers feel more comfortable going downtown to purchase jewelry or dine at a restaurant when they know that parking will be readily available right in front of their destination. The fact that the downtown businesses had a very good Christmas season changed the opinion of many, and they now think that the pay stations are not so bad after all. It seems that whether a business is "in-favor" or "not-in-favor" of the pricing system is related to how well their business is doing. Businesses that have been successful have not complained that the new parking pricing system is negatively affecting their business. However, a handful of retail businesses that are struggling still believe fervently that the parking pricing system is the cause of their financial woes.

Technical Tips

The City procured solar powered pay stations for two reasons. First, the city recognized this as an opportunity to be environmentally sensitive and forward-thinking. Second, the city had a large construction project two years ago that required digging up the sidewalks all through downtown and lasted 6-8 months. They did not want to recreate the inconvenience and hassle to the community from digging up the sidewalks again to install conduits for powered meters.

However, the solar powered stations have proven to be inconvenient because meters located in the shade of buildings, especially during winter months, need to have their batteries changed weekly. Also, solar-powered meters are on sleep mode until turned on. This requires an excess button that is not needed with powered meters. Any excess buttons to push and screens to navigate through add complication to the process of paying the meter. Many cities have found that it is best to keep the process as simple as possible. For example, to maximize the user-friendliness of the meters, Redwood City opted to remove the option to navigate the menus in Spanish. Since Ventura retained the Spanish option and also the ability for users to add time to their meters, the process of paying the meter takes slightly longer.

[31] Fulton, Bill. (September 14, 2010). Parking Management That Actually Manages Parking. http://fulton4ventura.blogspot.com/2010/09/parking-management-that-actually.html

[32] Mericle,T. (2011, January 27). Telephone interview.

Residential Permit Parking

Some of the pay stations were installed close to residential areas, so the Downtown Parking Permit Program was approved in 2009 to ensure all day parking was available for downtown residents with limited parking options. The program is fairly small since only a couple areas, mostly in single family neighborhoods, truly needed the permits. Generally one permit is issued per residential unit on a case-by-case basis. If the residential unit has no on-site parking, two permits may be issued. Also, multiple vehicles from the same household can share one permit. In this past year, about 40 permits have been distributed, and although visitor permits are complimentary, no one has requested them. A possible reason is that residents simply let their guests borrow the permit hangtags, or there is sufficient parking supply close by. There have been no complaints and no spillover problems into residential areas because there is enough supply provided by the free parking lots.[33]

Although the program is small, direct administrative and enforcement costs are minimal. Since the City already has an existing school parking permit program around high schools, the procurement of residential permits is simply done at the same time that the school permits are ordered. Direct administrative costs are low because permits are issued infrequently: each permit costs $20 and is valid for two years. Visitor parking permits are also available for up to seven days, and can be issued four times per year. Enforcement staff is already patrolling the same streets and lots so the program doesn't require hiring additional parking enforcement personnel.

[33] Gallegos, R. (2011, January 31). Telephone interview.

San Mateo

Background

San Mateo is considered one of the larger suburbs on the San Francisco Peninsula, located between Burlingame to the north and Belmont to the south. The Downtown comprises about 70 blocks, featuring a mix of locally owned and selected chain retail stores. With recent changes in the downtown, such as the Downtown Cinema, Downtown Train Station, and New Main Street Garage, the city saw a need to examine the future direction of downtown, the results of which are documented in the 2009 Downtown Area Plan.

Downtown Parking Supply

The Downtown San Mateo Association (DSMA) Parking and Safety Committee identified four goals for downtown parking:

- Make parking for Downtown customers a convenient, user friendly and reasonably priced experience
- Discourage the use of on-street parking by employees and business owners
- Make garages and peripheral parking the most economical parking for employees and owners
- Reduce the number of citations for parking violations in Downtown

Up until July 2010, the downtown parking supply consisted of on-street parking, which was priced at $0.50/hour with a two-hour limit, surface lots, and five parking garages. The parking garages were color coded based on five levels with two tiers of pricing and time restrictions. Ground level was priced at $0.50/hour with a time limit of 2 hours. The middle levels were priced at $0.50/hour with a time limit of four hours. The upper levels were priced at $0.25/hour with a limit of 10 hours. Parking restrictions were enforced Monday through Saturday, 8:00 a.m. to 6:00 p.m. All parking was free after 6:00 p.m. and on holidays.

Originally the Long Range Parking Committee established this color and pricing scheme described above to have ground level parking be priced the same as on-street parking. However, customers found the multi-level pricing scheme confusing. In response, the City standardized the pricing system in July 2010 to $0.50 for 4-hour parking for any level, with the upper level geared for business owners, employees, and other long term parkers at $0.25 for 10-hour parking (See Table 1). The on-street pricing and time restrictions changed as well. Originally set at a two-hour time limit for $0.50 cents an hour, the City found that people wanted to spend more time than just 2 hours, and so increased the maximum time limit to 4 hours. The first two hours are $0.50 per hour, after which it is $1 per hour.[34]

[34] Staff report. (July 12, 2010). Ordinance Modification: Downtown Parking

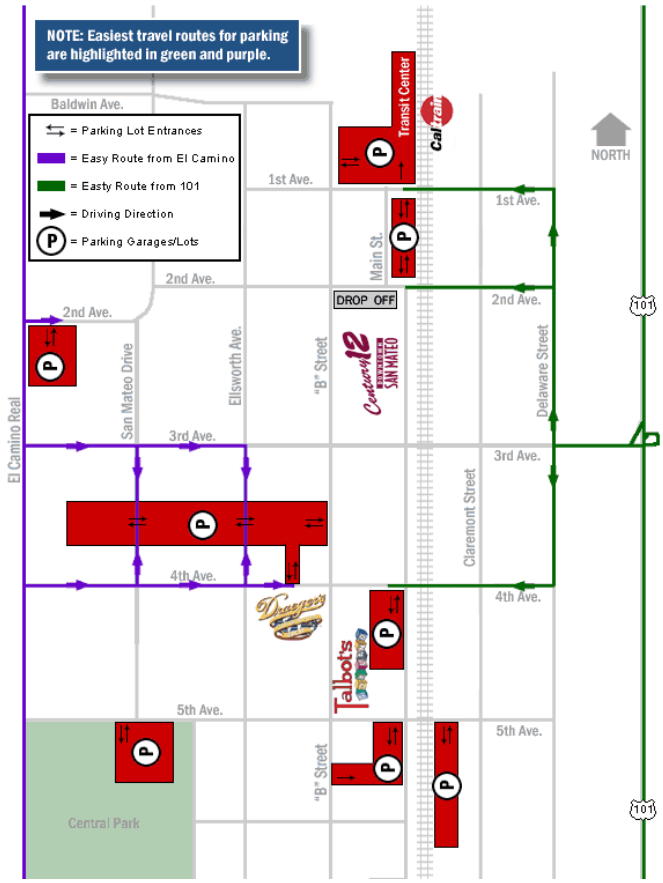
Table 5.1.1: Downtown San Mateo Garage Pricing (Before and After)

Before				
Garage Level	**Color**	**Price/Hour**	**Time Limit**	**Enforcement Times/Days**
Underground	Lavender	$0.50/hour	2 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.
Ground	Blue	$0.50/hour	2 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.
Immediate Next Level Up	Red	$0.50/hour	4 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.
Upper Levels	Green and Orange	$0.25/hour	10 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.
After				
Garage Level	**Color**	**Price/Hour**	**Time Limit**	**Enforcement Times/Days**
Underground	Lavender	$0.50/hour	4 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.
Ground	Blue	$0.50/hour	4 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.
Immediate Next Level Up	Red	$0.50/hour	4 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.
Upper Levels	Green and Orange	$0.25/hour	10 hours	Mon-Sat 8:00 a.m. – 6:00 p.m.

The Transit Center Parking Garage for the Caltrain station is one of the 5 garages downtown (See Figure 6). Areas around the train station include commercial, retail, medium-high and high density multi-family uses. However, the train tracks act as a physical and physiological barrier separating the residential on the periphery of the downtown and the retail/commercial uses in the core of downtown. Hence, the city does not experience any spillover issues from commuters parking in residential areas or residents parking in retail/commercial areas.

There are surface lots located between B Street and Claremont Avenue, both east and west of the railroad tracks. The two lots east of the tracks are meant for long-term parkers such as downtown employees. These lots are free of charge, but are restricted to either two-hour or 10-hour time limits. The two lots west of the tracks, closer to the downtown core, also offer free two-hour parking but charge $0.25/hour for four-hour parking.

Figure 5.1.3: Downtown San Mateo Parking Map



Source: City of San Mateo

Funding

One priority of City of San Mateo Downtown Area Plan, approved by City Council in May 2009, is to examine methods to fund additional downtown parking. The Central Parking and Improvement District (CPID), which included on-street parking, surface lots and five (5) parking structures, was established by the City in 1954 as a means of financing land acquisition and construction of downtown parking. However, the bonds issued to fund these parking facilities have since been retired. The CPID also has another component which collects parking in-lieu fees from developments. These fees are banked by the City to build more parking in the future.

The City is currently working with the Downtown San Mateo Association (DSMA) to explore the formation of a Property Based Improvement District (PBID) as well as other funding options, including options with contributions by property owners and/or tenants. Meter revenue is collected separately and does not go into the General Fund. The revenue is used to cover administrative costs and consultant services for cleaning and maintenance of the parking facilities. Citation revenue from parking enforcement goes back to the Police Department and into the General Fund. In general, revenue generated exceeds the costs of administering and enforcing the pricing system. The excess funds are targeted for future parking supply expansion.

Administration

Staff in both planning and public works departments has various responsibilities associated with parking. It is estimated that one FTE planning staff devotes 15% of their time to parking administration related activities, one FTE public works staff devotes 100% of their time, and another FTE public works staff who devotes 60% of their time to parking administration. The City contracts third party services for collections and maintenance, and also funds one full-time officer with meter revenues. Other enforcement officers are part-time employees funded from the General Fund.

Results

There is a perception, mostly by seniors living near downtown and business located downtown, that there is a lack of parking. Parking occupancy studies have shown 100% occupancy during peak hours of 10:30 a.m. to 2:00 p.m. and 4:00 p.m. to 10:00 p.m. Two of the parking garages, Central Parking Garage and 2nd & El Camino Garage, are typically full with visitors and employers/employees. The Main Street Garage is often full on evenings and weekends. The Downtown Area Plan mentioned that the City is considering long term/overnight reserved parking for premium fees in the downtown retail core. The City is also actively pursuing additional parking inventory in the form of another parking garage. To pay for the garage the City is contemplating extending enforcement hours past 6:00 p.m. to 10:00 p.m.

Burlingame

Background

Burlingame is located in San Mateo County and has a significant shoreline on San Francisco Bay. Similar to Mountain View, Burlingame also has a Caltrain station downtown. The Caltrain station is currently surrounded by restaurants, auto row, medium-density multi-family residential and other commercial and retail uses. However, they are currently not experiencing spill-over issues caused by commuters parking in residential areas.[35]

Like most cities, the downtown is primarily a shopping and dining attraction. Even though Burlingame is a suburban city of approximately 28,000 people, the Downtown has metered parking on-street and charges for parking in most of the 20 City-owned off-street parking facilities. Back in 1999, the prices were a flat rate and not differentiated by demand. People approached the City complaining that parking was difficult because people, mostly employees and shop-owners, were parking all day and feeding the meters.

The City decided to raise the parking rates along the store fronts and made it cheaper to park farther away. They designated parking lots for long term parking especially for employees. Now parking prices are lower with increasing walking distance from the core area to encourage employees to seek out less expensive, more remote parking in the outer fringe of the district. This increases short-term parking supply for customers and visitors so that they have access to the prime convenient spaces along Burlingame Avenue.

The city implemented this price change in two phases by raising the hourly rate in two increments of $0.25 along Burlingame Avenue over a period of two or three years. Once rates on Burlingame Avenue were raised, prices on other streets were adjusted accordingly by demand.

On-Street Meters

Downtown Burlingame has metered on-street parking on most local roadways. Meters on Burlingame Avenue have a one-hour time limit for $0.75/hour, while most of the other meters in the area have 2-hour and 4-hour time limits. There are a limited number of 24-minute meters for $0.30/24-minutes at areas with high turnover along Burlingame Avenue. Also, there are 10-hour meters in more remote areas which are available for employees or long-term visitors at $0.25/hour.

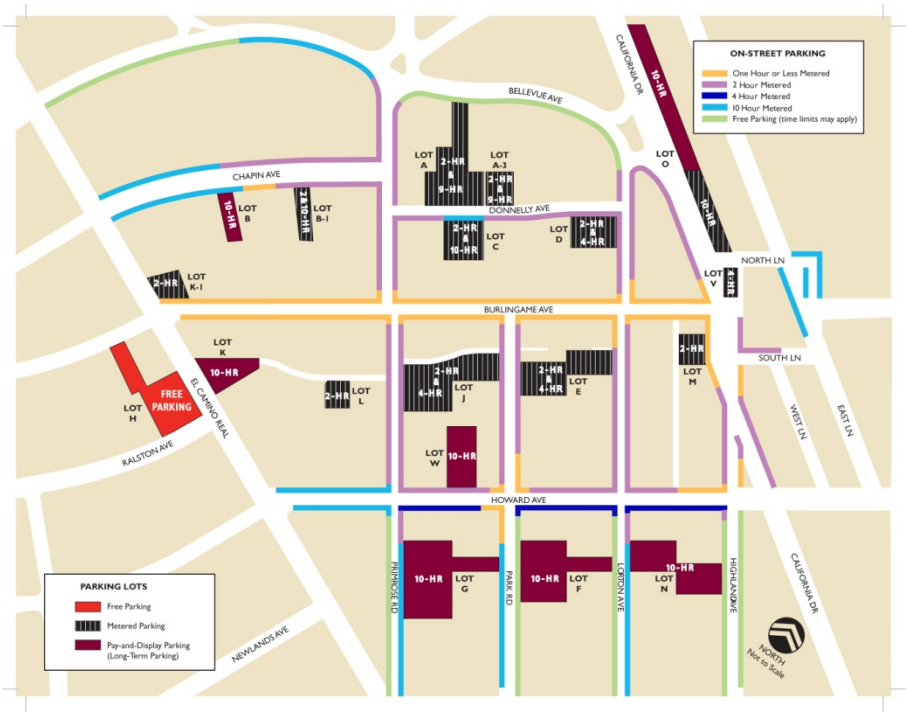
Off-Street Lots

Downtown Burlingame consists of 20 City-owned off-street parking facilities (18 lots and 2 garages). The off-street lots are equipped with 2-hour, 4-hour, 9-hour, and 10-hour parking meters. The 2-4 hour meters cost $0.75/hour and the 9-10 hour meters cost $0.25/hour. Seven of the 18 lots have special pay-and-display meters where users insert money, enter their parking space number, and place the

[35] Chou, A. (2011, January 25). Telephone interview.

printed receipt on the dashboard of their car. Depending on the pay-and-display lot, there is a flat rate of $1 or $2 for up to 10 hours. There is one free parking lot (Lot H) located on El Camino Real on the edge of downtown which has a 12-hour parking restriction.

Figure 5.1.4: Downtown Burlingame Parking Map



Source: City of Burlingame

Funding

Meter revenue goes into a separate fund, the Parking Enterprise Fund, which is used for parking improvements in general. Citation revenue goes into the General Fund.

Administration

Public Works and the Police Department are solely responsible for parking administration related activities. There is one staff member in Public Works that devotes 20% of their time to parking administration. In the Police Department, there are 4 FTE parking enforcement officers, 2 FTE meter technicians, a FTE sergeant, and a FTE clerical support position, all funded through the Parking Enterprise Fund.

Results

Overall the City considers the pricing system to be very successful. The City achieved the desired turnover on the main street, Burlingame Avenue. One minor issue that has come to surface is that many of the store-owners who were advocates of the pricing system have moved out, and the City is working on re-educating the new owners on why the pricing system is in place and how it works.

Palo Alto

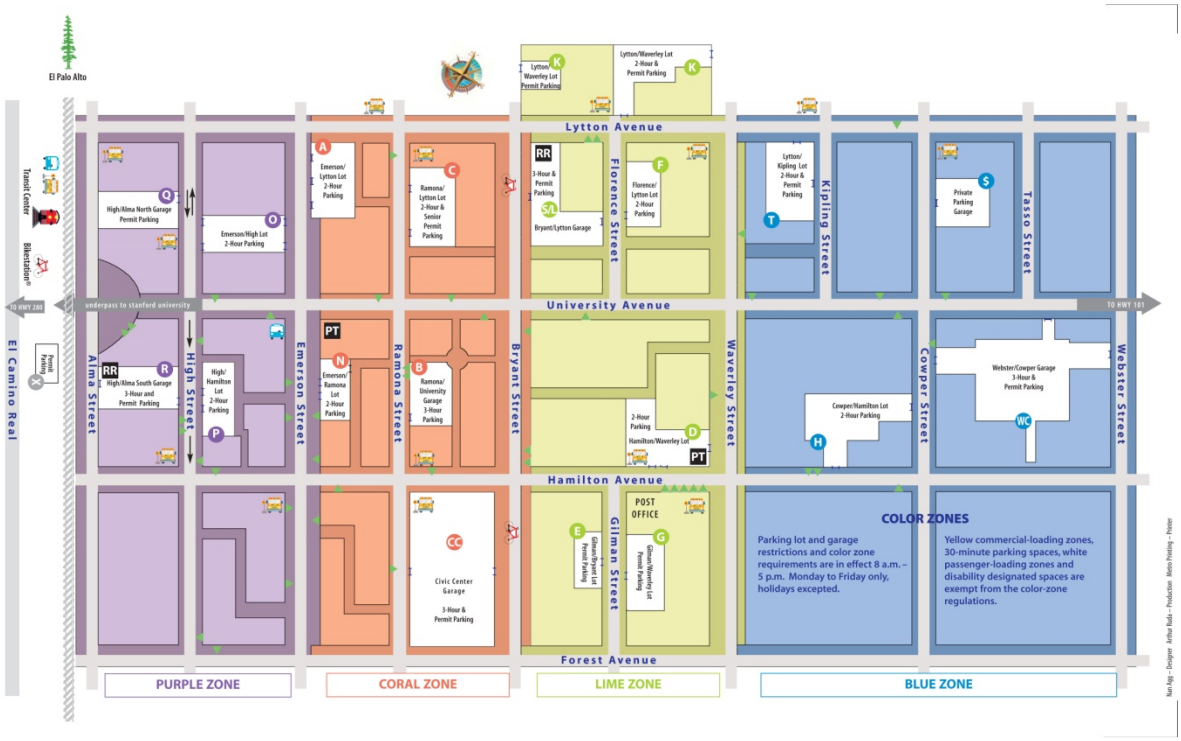
Background

Palo Alto is located in the northwest corner of Santa Clara County and shares its borders with Mountain View and Los Altos, among other cities. The City serves as a central economic focal point of Silicon Valley with many high-technology companies and research facilities. In addition, Palo Alto has a lively retail and restaurant trade, and is home to areas of Stanford University. Unlike Redwood City and Ventura with their pricing system and the park-once strategy, Palo Alto took a different approach to manage the higher demand for parking. The City of Palo Alto retains free parking and chooses to manage their downtown parking with 1) an innovative system of color-coded time zones, 2) permits for visitors or businesses, and 3) a parking assessment district.

Color Zone

The City offers free parking downtown with time restrictions of two hours for on-street spaces and surface lots, and three hours for parking garages. In order to keep people from re-parking in the same area after they exceed the time limit, the city divided the core business district of downtown into four color-coded zones (purple, coral, lime, and blue) which are signed (See Figure 3). People must move their vehicles out of the zone once the time limit expires or they will receive a ticket. Two hour restricted parking areas that are outside the color zones are enforced with signage. Short term parking (30 minutes), commercial loading zones, passenger loading zones, and disability parking are exempt. The other exception is the existence of a privately owned garage which charges for parking.

Figure 5.1.5: Downtown Palo Alto Parking Map



Source: City of Palo Alto

Formation of Zones

One of the greatest challenges facing the city in the 1990's was reparking, which they termed "sleeper parking". Sleeper parking refers to the practice of employees who park in two-hour or three-hour on-street spaces, and by moving their vehicles from one parking space to another when the time is up, monopolize many of the most convenient on-street parking spaces. This restricts the availability of these prime spaces to shoppers, restaurant customers, and other visitors. Survey results showed that sleeper parkers were using between 15 to 20 percent of available spaces.[36] In order to manage this issue, City staff, in cooperation with the Palo Alto Chamber of Commerce, recommended the idea of a "sleeper parking resolution" in 1994 as part of the comprehensive downtown parking plan.

In the formation of the color zones, staff considered as many as eight zones and as little as two zones. Staff believed that too many zones would dilute the effect and make it easier for people to move from zone to zone; and too few zones would result in a significant hardship for downtown parkers (Johnson, 1994, p.2). For example, having only two color zones would highly inconvenience people who have to make multiple trips to the downtown during the course of a single day. They would be forced to 1) park in the other color zone, which could be a significant walk if their destination is located at the extreme end of the respective color zone, 2) in the peripheral neighborhoods surrounding the color zones, or 3) purchase a one day parking permit. Consequently, many employees would probably park in the surrounding neighborhoods to avoid the hassle and thus create a parking problem for residents in the neighborhoods (Venable, 2004, p. 4).

Zone Colors and Signage

The four colors chosen were a result of several factors, such as availability of the color in reflective material by sign manufacturers, and visual prominence for easy identification. Colors such as red, green, brown, etc. were already designated for various sign classifications by both Federal and State manuals. The City chose four other colors—purple, light blue, coral and strong yellow-green—that were recommended as suitable for future use by the Federal Highway Administration (Johnson, 1994, p. 2).

The existing 12" by 18", green and white, two or three hour signs were replaced by 14" x 20" signs. The parking signs have a white background with different colored letters, a standard green color for the top portion of the sign and the color of the zone for the bottom portion of the sign (Aggarwal, 1996, p.4). City staff and the Chamber of Commerce purchased and installed the appropriate signs with $33,000 adopted as part of the Public Works Department's 1994-95 budget (Johnson, 1994, p.3).

Outreach

City staff, in collaboration with the Palo Alto Chamber of Commerce, formed the Parking Committee which produced a parking brochure clearly illustrating the locations and color zone of available parking downtown. In addition to the four color zones, information covered free customer parking, long-term

[36] Venable, M., Aggarwal, A. (July 12, 2004). City Manager's report: "Status report on downtown and California Avenue parking"

visitor parking, long-term employee parking, alternative modes of transportation and helpful phone numbers. Prior to the effective date of the sleeper parking restrictions, all of the signs were replaced by the new signs and the parking brochure was mailed to all of the downtown merchants. In addition, special events and considerable publicity through newspaper articles and advertisements were planned around the effective date. The Parking Committee also conducted training sessions for downtown employers and employees (Aggarwal, 1996, p. 4).

Enforcement

In the first four to six weeks after the program was effective, warnings were issued to violators instead of citations to help people get accustomed to the new parking restrictions[37]. Warnings included a copy of the parking brochure as an extra measure to educate violators about the new system. In the first nine months after the initial grace period, vehicle license plate number and citation data showed a 97.3% compliance rate. In addition, a comparison of the number of citations issued in the same area prior to color zone implementation, indicates that 2,889 fewer citations were issued in 1995.[38]

Parking enforcement within the Police Department is comprised of 7 Parking Enforcement Officers (PEO), one Parking Enforcement lead, and a supervising Police Sergeant. Mondays through Fridays, a PEO was assigned to a specific zone to conduct proactive regulatory enforcement. The uniqueness of the color zones requires that the PEOs walk the entirety of each color zone and manually enter the license plates of every parked vehicle into handheld citation computers. On any given day, an individual PEO entered between 750 and 1,000 license plates (Venable, 2004, p. 2).

Back in 2005 or 2006 the City changed the classifications from “Parking Enforcement Officers” to “Community Service Officers”. Currently there are 8 full-time officers and one full-time, non-sworn management position, which are funded by the General Fund. Typically four of the officers patrol the color zones (one officer in each color zone) to check for reparking and permit violations[39].

Funding

According to the 2004 report, PEOs wrote about 50,000 citations a year for enforcement in downtown, outside of downtown, and California Avenue areas, which contributed approximately $1.8 million annually in revenue to the General Fund (Venable, 2004, p. 2).

Spillover Issues

Although the City provided as many additional permit spaces as possible for downtown employees so that spillover parking into adjoining neighborhoods would not increase, parking surveys conducted after program implementation showed that there was an increase of about 100 non-residential vehicles parking in the residential neighborhoods. In March of 2004, staff conducted another survey in the

[37] Johnson, L. (November 10, 1994). City Manager’s report: “Sleeper parking resolution adopting restricted parking zones”

[38] Aggarwal, A. (October 17, 1996). Color Zone Parking in Downtown Palo Alto

[39] McAdams, K. (2011, February). Telephone interview

residential areas surrounding the Downtown color zones and found that approximately 577 non-resident vehicles parked in the neighborhoods north of University Avenue and approximately 766 non-resident vehicles parking in the neighborhoods south of University Avenue. At Council direction, staff worked with members of the Downtown North and SOFA Neighborhood Associations from 1996 to 2001 and developed a proposal for a residential parking permit program. However, due to budget constraints, the program was never implemented.

Results

The City Council adopted the color zone parking ordinance in 1995 on a one-year trial basis. After one year it was concluded that the program was successful in freeing up more parking spaces for visitors in the downtown area. Evaluation of success was dependent on several factors such as spillover parking into adjoining neighborhoods, availability of parking spaces, availability and demand for parking permits, and responses from citizens, merchants, and visitors (Aggarwal, 1996, p. 6). There were, however, some issues that had surfaced during the year that still needed attention. Therefore, the program was extended for another year to increase marketing and outreach efforts, conduct customer and employee surveys, and determine support for a Residential Permit Parking Program. Based on the success of the color zone program, the program was made permanent in 1997 (Venable, 2004, p. 1).

Although no formal surveys were conducted, all complaints and comments were tracked. The general consensus of owners/managers of restaurants and most retail enterprises was that the color zone program had definitely increased the number of available parking spaces and thus had a positive impact on their establishments. However, out of 309 total complaints received, 87% related to reparking within the same color zone when making multiple trips to the business district in a day (Aggarwal, 1996, p. 4). The City Manager's report of July 12, 2004, prepared by Venable and Aggarawal, explains the common situation caused by the ambiguity existing with current signage:

> *"For example, an individual running a quick errand parks in the Lime Zone for 20 minutes during the morning. A PEO records the vehicle's license number in the morning. Later in the afternoon, believing his/her two-hour limit has not expired, having an hour and forty minutes left for that respective day, the individual again parks in the Lime Zone. However, there is not any way for the PEO to determine how much time the person has parked in that specific zone each time he/she parks and as a result, a parking citation is issued for reparking in the Lime Zone."*

In response to this concern, the City created 33, 30-minute parking spaces with green curbs throughout Downtown which are excluded from the color zone restrictions. This enables drivers to park in a 30-minute space to run short errands and repark in the same color zone in a regular two-hour spot at a later time without receiving a citation (Venable, 2004, p.5). Another way staff has addressed the issue is through the adjudication process. A ticket recipient is granted a onetime dismissal after an appeal or complaint is received by the City.

Parking Permits

The City provides permits to dissuade downtown employees from parking in adjoining neighborhoods. The Revenue Collections department distributes permits. They offer one-day visitor permit cards for $15 which allows people to park for the entire day in off-street spaces only. Permits are also available for employees and employers located in the downtown parking assessment district. These permit stickers can be purchased quarterly at $135 or annually at $420 and are usable for parking in any of the 9 off-street parking lots and garages. There are also transferable permits cards usable at three parking

garages that are sold to business owners or employees for $270/2 quarters, and can be used on multiple vehicles.[40] Permits are also available for the parking lot near the Sheraton Hotel at reduced rates.

As the downtown permit program is a small portion of downtown parking management, the same 4 community service officers who patrol the color zones for reparking, also watch out for vehicles with expired permits. Parking citations cost $38 to $43 and go to the General Fund. Permit fees, along with taxes from the assessment district go into the Assessment District Fund. Each department involved with the parking program (e.g. Police or Transportation Department) gets reimbursed from the fund. The rest of the fund is used to cover parking district operation and maintenance costs. This includes sweeping, landscaping, signing and lighting.

Parking Assessment District

The parking assessment district in Palo Alto was set up by the City in junction with the California Avenue Business Association in the late 1970's or early 1980's. The City had purchased surface lots and created parking structures within the districts. In order to pay for construction and purchases, bonds were issued and the parking assessment district was formed to pay the annual bond payment. The funds collected are then used for payment of principal and interest on bonds for capital improvements.

Properties in this district are assessed annually based on occupied building square footage, the number of off-street parking required for the usage, and the off-street parking provided. A credit is given for off-street parking provided by the property owner.[41] Individual assessments for businesses range from zero to thousands of dollars. Assessments can be raised without voter approval because the parking assessment district was grandfathered in before Proposition 218. However, parking bonds issued under Bond Plan G (Section 13.16.150. Palo Alto Municipal Code) require that a public hearing be held annually to allow each property owner the opportunity to question the computation of his/her assessment.

Administration

Once the Public Works engineers make the assessment calculations, the City Council may approve them, after which they are sent to the Santa Clara County Tax Collector. The Director of Public Works has the authority to adjust parking assessment area requirements. However it is the Chamber of Commerce Parking Committee which oversees the Downtown Palo Alto Parking Assessment District. The committee meets on a monthly basis and is responsible for the district budget and the cleanliness and safety of downtown parking structures.[42]

[40] City of Palo Alto website. http://www.cityofpaloalto.org/depts/pln/transportation/parking/default.asp
[41] Staff report to City Council (June 9, 2008) *www.cityof**paloalto**.org/civica/filebank/blobdload.asp?BlobID=12309*
[42] Palo Alto Chamber of Commerce website. www.paloaltochamber.com

San Jose

Background

San Jose is the third largest city in California and located at the southern end of San Francisco Bay. Since 1950s, the city had undergone rapid growth and is now home to many high-technology companies and sizable government employers. In the year 2000, there were increased concerns of parking supply in the downtown area due to changes such as the Civic Plaza redevelopment project, revitalization of East Santa Clara Street businesses, San Jose Medical Center changes, and increased enrollment at San Jose State University (SJSU). In order to improve on-street parking operations, minimize parking spillover, and improve the parking supply/demand balance in Downtown, the City adopted residential parking permit zones in several areas. The section below summarizes the formation process of the Horace Mann Permit Parking Zone and the South University Neighborhood Permit Parking Zone as recounted in a study by Wilbur Smith Associates in association with Moore Iacofano Goltsman Jr. Associates for the City of San Jose. This study culminated in a report titled *On-Street and Residential Permit Parking Programs* in June, 2002.

Outreach Process

A major public outreach program was conducted in 2000 to determine the level of residential support for parking permit zones in the new San Jose Civic Plaza neighborhood. Three community workshops, sponsored by the Civic Plaza Parking and Traffic Committee (PTC), were held over a three week period. (The Civic Plaza Parking and Traffic Committee were previously established by the San Jose City Council to study the parking and traffic impacts in and around the new Civic Center and SJSU.) The workshops introduced the neighborhood parking study, encouraged members of the public to share their parking experiences, and facilitated discussion about permit parking issues. The community commented about permit implementation process, permit program design, and permit issuing.

Promotion for the workshops involved outreach to local neighborhood groups and distribution of a project newsletter to all residents within the neighborhood. The newsletter also summarized potential parking solutions, and contained a mail-in questionnaire with a series of parking related inquiries. Keeping community demographics in mind, the newsletter was distributed in both English and Spanish, with a Vietnamese tagline that directed Vietnamese-only speakers to a special telephone line to receive more information.

Permit Boundary Determination

Based on the public feedback received, the technical team and the Civic Plaza PTC decided there was sufficient interest to proceed with a petitioning process for permit parking. First, the criteria used to guide establishment of a permit parking zone needed to be agreed upon. San Jose already had a few guidelines for residential permit program implementation which include the following:

1. There must be 75% peak occupancy in the area because the 75% peak occupancy is clearly a point when the amount of parking activity in a neighborhood would start to impact the ability of residents to find parking near their homes.
2. Over 50% of peak parkers in the neighborhood must come from outside the neighborhood because it is a clear indicator that the use of permit parking would be effective at keeping outside parkers out of the neighborhood.

3. A majority of the dwelling units must be owner occupied because it is inherently more difficult to administer and prevent abuse of a permit program in an area dominated by multi-family dwellings and apartments.

The PTC considered the criteria, but because some areas could not meet all the criteria, they voted to eliminate the requirement that the majority of the dwelling units be owner occupied, and also required that a simple majority of the households sign the petition in order to approve the residential permit zone.

Identifying areas that met the 75% occupancy criterion was accomplished to the block-face level by surveys. Estimating the percentage of parked vehicles from outside the neighborhood was more complex due to the absence of vehicle registration data. The methodology assumed vehicles parked on the streets early in the morning (5:00 a.m.) were resident vehicles and compared it to the number of vehicles observed during midday. By deducting the assumed proportion of 5:00 a.m. parkers who were residents from the midday parkers, an estimate was made of the number of midday parkers who were not residents. Block-faces that met both parking occupancy criteria became the area eligible for residential parking permits. The boundary for petitioning was extended one to two blocks beyond the limits of the eligible area to account for potential spill over of parkers.

Neighborhood Canvassing

Petitioning involved 1) mailing out an information packet along with a mail-back petition form to each household in the area, and 2) resident volunteers from each block going door-to-door to collect petition signatures. The petitioning continued from late spring and summer to fall, when the City sent out a final mailing for signatures. More than 50% of residences on each block had to sign the petition in support of permit parking to qualify. Each residence had a single vote, and each unit in a multi-unit residential building counted as a residence.

Permit Zones

The City of San Jose has 16 residential permit parking zones (See Table 2). These zones include areas around San Jose State University, the Convention Center, the Civic Center, and the Flea Market. Residential permits are sold for $30/year or $30/2-years depending on the zone. The City of San Jose charges $30/year for permits around the university since the university operates on a yearly basis, and charges $30/2 years for permits in other zones. The maximum allowable permits issued per household varies from 3 to 4 permits. Visitor permits are also sold at $30/year or $30/2 years and a maximum of 2 permits are issued per household. In addition to residential parking permits, downtown residents can also purchase discounted overnight parking at four garages in the downtown. Residents who purchase the discounted card can park in the garages Monday through Friday from 5:00 p.m. to 8:00 a.m. The parking card costs $50 and is sold by Central Parking, a private contractor who manages the downtown garages.

Table 5.1.2: Sample of San Jose Residential Permit Zones and Restrictions

Permit Parking Zone	Hours	Days
Arena (Autumn/Montgomery, Garden/Alameda, Parkside, St. Leo's)	Need permit at all times	
Berryessa	10:00 a.m. – 6:00 p.m.	Weekends and holidays
Civic Center	9:00 a.m. – 5:00 p.m.	Monday through Friday
Civic Plaza (Horace Mann) (South University Neighborhood)	8:00 a.m. – 6:00 p.m. 8:00 a.m. – 8:00 p.m.	Except Saturdays, Sundays, and Holidays Except Sundays and Holidays
Market-Almaden	Need permit at all times	
University	8:00 a.m. – 8:00 p.m. 8:00 a.m. – 4:00 p.m.	Monday through Thursday* Fridays*

*enforced September 1st-June 1st

Administration

The Department of Transportation is responsible for all administrative and enforcement activities related to the RPP program. The department works with the community to set the enforcement times and boundaries of a proposed permit zone. Depending on the situation, boundaries may be set at mid-block or full-block. Currently there is the equivalent of 2.5 FTE administrative staff that devotes about 60% of their time to RPP-related activities. There are also three Associate Engineers who act as the RPP contact person for existing RPP zones. Within the department, the Residential Parking Permits Office issues permits, and the Parking Compliance Office manages parking enforcement. Actual enforcement is carried out by Parking and Traffic Control officers. The department also installs and maintains the signage for the RPP program.[43]

Funding

The permit fee is set for cost recovery and not revenue generation. Currently, however, the program covers only 63% of its costs. Revenues from permit sales and related parking citations go to the General Fund. Other funds combined with the General Fund pay for the administrative and engineering positions related to the RPP program. Due to budget cuts, the service of expanding existing RPP zones or adding new zones is no longer provided because the department can only retain the staff who maintain the program.[44]

Parking Guidance System

In 2004, San Jose initiated the implementation of a Parking Guidance System which uses advanced computer technology and electronic message signs to direct motorists to parking locations and display real-time parking space availability and custom text messages. Such a system has many benefits: 1) it provides motorists with timely and accurate information about parking locations and space availability, 2)it is extremely useful during large downtown events, 3)it reduces the amount of time motorists spend

[43] Halley, P. (2011, February 03). Telephone interview
[44] Halley, P. (2011, February 03). Telephone interview

searching for a parking space and thus eases traffic congestion and air pollution, and 4)it maximizes the utilization of parking spaces.[45]

There are five major components to the system: Parking Access Revenue Control System (PARCS), Central Computer, Garage Dynamic Message Signs (GDMS), Field Dynamic Message Signs (FDMS) and communications between the parking facilities, Central Computer and Electronic signs.

The PARC system obtains accurate counts of parking space availability using gate arms/ticket dispensers, parking pay machines, and the system which senses the entrance and exits of vehicles. The data collected in the computer at each parking facility is sent to the PARCS central server. The server sends the data to the PGS central field computer, which then relays the data to the electronic signs. Table 3 details the cost, implementation year, and description of each major component.

Although the system is currently working well, initial challenges were related to the unreliability of Wi-Fi and Radio Frequency, and software of the field dynamic signs. Due to interference and other issues with the Wi-Fi network, the City decided to install hardwire cables between the facilities. Also, the software used to run the signs was custom-made in Germany and thus it took about a year to overcome the various glitches that arose with the new technology.

Table 5.1.3: Parking Guidance System Implementation

Major Component	Description	Cost	Implementation
Parking Access Revenue Control System (PARCS)	Obtains accurate parking space count information. Includes Gate Arms/Ticket Dispensers, Parking Pay Machines, PARCS Facility Computer, and PARCS system (where the garage count information for the PGS is obtained from). The system senses when a vehicle enters and exits the garage and updates the total available spaces	$1.5 million	2004 for 4 garages
• Central Computer	Collects and stores parking space count information from each facility. Analyzes and sends parking space count information and custom text messages to the signs.		
Garage Dynamic Message Signs (GDMS)	Located at garage entrances and receive data from Central Computer to display real-time parking information.	$210,000	2005 for 7 garage entrances
Field Dynamic Message Signs (FDMS)	Receive data from the Central Computer to display real-time parking information and provide direction to public and private parking facilities.	$1.5 million	2008 installed 2, 2009 installed 11
• Communications	There is T1 and DSL between 6 parking facilities and central computer. There is hardwired (Ethernet) communication between Central Computer and Electronic Signs. The hardwired solution proved to have better reliability than Wi-Fi or Radio Frequency (RF).	Mainly used existing intersection connections to City Hall. It was simply a matter of networking computers at City Hall to the traffic signal controllers, and then wiring half a block to signs at each location.	

[45] Nelson,B. (2011, Febuary 04). Telephone interview, email correspondence, PPT presentation for 2008 CPPA Conference

5.2 Unbundled Parking

This section discusses one parking management technique, unbundled parking, in greater detail as specifically requested by City Staff. Unbundling is a pricing tool that can bridge the gap between development and parking management. Residential and commercial parking requirements are often perceived as tying developers' hands from building the true market demand for parking, by requiring parking supply that the market may not desire. Unbundling the cost of parking spaces from units is also a tool that helps to gauge market demand and control the costs of development.[46] It is also a management tool that provides greater transparency about the true costs of parking, so residents (and employees) can make fully informed choices.

Discussion of Unbundling

What is Unbundling?

Traditionally, rent includes the cost of an apartment unit and the cost of the parking space or spaces that the tenants use in a facility. This tends to work best when there is a large supply of parking that does not need to be managed and/or the apartment building is located in a place that has limited alternative transportation choices. Additional post-development approaches could include:

- Providing a discount to renters that need or desire less than the standard parking provided with a unit and charging an extra fee to tenants that desire additional parking.
- Creating a secondary market to broker available parking spaces

For newer developments, in urban areas where the land costs are more valuable/expensive, developers may try to increase the number of units that fit on a lot. In this case greater square footage dedicated to parking spaces tends to make developments more expensive and less likely to "pencil out." Unbundling parking means that the cost for rent and the cost for parking are completely separate. Therefore tenants would pay only for the parking that they want to use. Developers may favor this as an approach to increase project density and take advantage of a city's land use diversity and alternative transportation infrastructure.

Benefits of an Unbundling Program

In walkable urban areas, developments adjacent to transit services can take advantage of alternative modes of transportation by reducing parking demand thereby justifying lower parking requirements. The demand for parking spaces in developments like these is usually much less than for suburban developments, therefore unbundling parking for the development would help residents make informed transportation decisions. According to Todd Littman, the impacts of unbundled parking are comparable

[46] It should be noted that this tool works equally well for commercial realty and leases.

to parking pricing but usually face less opposition. Unbundled residential parking typically reduces vehicle ownership by 5 to 15%.[47] Unbundled commercial parking allows businesses that rent commercial space to reduce their rent and take advantage of parking cash out and alternative transportation programs.

According to Donald Shoup, unbundling parking will reduce car ownership rates by raising the ownership costs of the second (plus) vehicle in the household, making the second car rarer and culling the older less fuel efficient vehicles from the overall fleet and increasing memberships in carsharing programs.[48]

Potential Drawbacks to Unbundling

Generally, neighbors of large residential developments are against unbundling and reduced parking requirements due to the fear of spillover of residents' vehicles into the adjacent neighborhood. This often leads to such developments being overparked (i.e. too much parking supply required) causing excess development expense devoted to the parking supply. There are a number of ways to manage against this eventuality which include active parking management around the development (e.g. residential permit parking, time limits and/or pricing) and requiring the developer to participate in a transportation demand management program for residents. It should be noted that if the parking is provided for free to residents, the cost will be realized in higher rent.

Fairness is another potential concern related to unbundling. Almost everyone pays the cost of parking, but almost no one pays for it directly. When parking is bundled into rent, the cost of overall rent is higher, representing a larger share of income and greater burden on fixed income families. Unbundling parking fees help to ensure transparency in fees and help people understand that their parking isn't actually free, but an additional cost that may impact their transportation choices.

Typical Implementation & Enforcement Procedures

Unbundling is typically used as a code tool that allows a developer to reduce the parking requirement for their development by 5-10%. This is usually requested/applied for during the project approvals process.

Successful Examples of Unbundling

Most successful examples of unbundling include specific plans and executed development projects. Two examples from the City of San Francisco are described below.

[47] Littman, Todd. Parking Management Best Practices. Chapter 5, pp 151.

[48] Shoup, Donald. The High Cost of Free Parking. 2006. Chapter 5, PP 571.

San Francisco Waterfront Plan

The Central Waterfront Plan includes the elimination of dwelling unit density restrictions, designates residential as a principally permitted use, limits retail and office uses to the first and second stories, eliminates minimum parking requirements and requires unbundled parking from the rental or sale of residential uses. [49]

SOMA studios and Apartments (Affordable Housing)

The City of San Francisco allowed unbundling to be used as a tool for the SOMA Studios and Apartments mixed used development to fit on a limited 1-acre parcel. Because unbundling was applied, in addition to a reduced parking requirement for affordable housing, 0.38 parking spaces were accepted per unit.[50] The unbundling freed up development space for an on-site daycare center and retail space. The location also took advantage of nearby BART and local bus transit service.

FHWA Value Pricing Pilot Program – San Francisco

A Value Pricing Pilot Program study sponsored by the FHWA in 2010 in San Francisco studied both unbundling and carsharing at existing developments to test the impact on vehicle ownership and housing choice. Some key findings from the analysis included:[51]

- The presence of both car sharing and unbundled parking within a building significantly reduced household vehicle ownership rates.
- Average vehicle ownership decreased significantly with the presence of car sharing and unbundled parking (0.76) compared to those properties with neither (1.03).
- For 22% of respondents, the presence of car sharing impacted their housing choice. This increased to 48% for households without vehicles and was a significant factor in their residential location decision.

Los Angeles Adaptive Reuse Ordinance (ARO) Study

In 1999, the City of Los Angeles passed an Adaptive Reuse ordinance (ARO) which was designed to encourage the conversion of vacant commercial buildings into housing in downtown Los Angeles. The ordinance included a streamlined incentive process and exemption from minimum parking requirements. Donald Shoup and Michael Manville studied 53 ARO buildings that were redeveloped by 2007. They found that ARO developers typically unbundled parking (where most other developers did not) and that the relaxation of the minimum parking requirements allowed the developers to meet the

[49] Wilbur Smith Associates, Michael R. Kodama Planning Consultants, Richard Willson, Rick Williams et al. (2007). Reforming Parking Policies to Support Smart Growth. Metropolitan Transportation Commission. Oakland CA. PP 44.

[50] Littman, Todd. Parking Management Best Practices. 2006. Chapter 5, pp 153.

[51] http://ops.fhwa.dot.gov/tolling_pricing/value_pricing/projects/not_involving_tolls/autousecostsvariable/ca_carshareinnov_sf.htm

many and varied preferences for consumer housing demand, and gave them the ability to provide more housing.[52]

Conclusion

In summary, unbundling is a pricing tool that is effective in steering development and housing and transportation choices. Based upon the current development environment, the City may want to allow the unbundling of parking from residential leases. Furthermore, unbundling should only be considered in situations where its implementation would not incentivize the shifting of parking demand on-street or into public parking lots. For example, unbundling should not be allowed in conjunction with a residential permit program.

[52] http://www.uctc.net/research/briefs/PB-2010-02.pdf